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Meridian 1

# **Meridian Link/Customer Controlled Routing**

## **Installation and Upgrade Guide**

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## About this guide

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This document details the steps and procedures required to successfully install the hardware and software for your Meridian Link and/or Customer Controlled Routing (CCR) system.

Meridian Link enables the call and voice processing capabilities of a Meridian 1 system to be integrated with a customer's computer-based business applications. Through Meridian Link, an application can place and answer calls, route calls, and even implement Interactive Voice Response applications.

CCR enables you to control and route Automatic Call Distribution (ACD) calls entering your Meridian 1 system. For example, for an incoming ACD call, you can provide a specific recorded announcement, music, or both, before assigning the call to an agent.

The hardware for both applications can be either an Intelligent Peripheral Equipment (IPE) Module or an Application Module.

The software consists of a base operating system (BOS) and application programs, referred to as the Meridian Applications.

This guide contains the following main areas of information:

**Chapter 1: Meridian Link/CCR co-residency** The first chapter provides an overview of Meridian Link/CCR co-residency and describes the keycode and the Ethernet LAN-based PC features.

**Chapter 2: Overview of Meridian Link** This chapter provides an overview of Meridian Link, describes its concepts, and lists required hardware and software.

**Chapter 3: Overview of Customer Controlled Routing** This chapter provides an overview of CCR, describes its concepts, and lists required hardware and software.

**Chapter 4: Meridian Link/CCR hardware** This chapter provides an overview of hardware components.

**Chapter 5: Hardware installation overview** This chapter lists the tools and provides tables to describe the installation of an IPE Module or an Application Module.

*Note:* If you intend to install an IPE Module or an Application Module, refer to Table 11 (IPE Module) or Table 12 (Application Module) in this chapter.

**Chapter 6: Site survey/installation checklist** This chapter provides a checklist to ensure that all hardware and software requirements are met for a successful installation.

**Chapter 7: Unpack and inspect hardware** This chapter provides information on receiving, unpacking, and inspecting the IPE Module and Application Module hardware components.

**Chapter 8: Hardware installation procedures** This chapter contains all of the main hardware installation procedures, with references to surrounding chapters for further information.

**Chapter 9: Meridian Link/CCR interface cabling** This chapter describes the cabling requirements. Two following chapters describe how to set up terminals, and how to configure the Meridian 1 system.

**Chapter 10: Installing peripheral devices** This chapter describes the procedures for how to set up and configure video display terminals and printers supported by the Meridian Link and CCR applications.

**Chapter 11: Peripheral device cabling interface** This chapter provides information on installing and configuring modems and the A/B switchbox.

**Chapter 12: Meridian 1 configuration for Meridian Link/CCR** This chapter shows how to use various software programs to configure the Meridian 1 to support Meridian Link and CCR.



**Chapter 13: Meridian Mail configuration** This chapter shows how to configure the Meridian 1 to support Meridian Mail.

**Chapter 14: Software installation, upgrade, and update procedures**

This chapter describes procedures for

- configuring the IPE Module and the Application Module, along with start-up information
- upgrading the software from one release to another (for example, from Meridian Link Release 4B to Release 5C)
- updating the software from one issue of a release to another issue of the same release (for example, from issue 4.17 to issue 4.25)
- reinstalling software (for example, after replacing a hard disk)

**Chapter 15: Link configuration** This chapter describes the configuration procedures for the links used by the applications.

**Chapter 16: Additional application configuration** This chapter describes the procedures used for scheduling backups and configuring terminal and printer ports.

**Chapter 17: Hardware upgrade** This chapter describes the procedures for upgrading from an MVME147 card to an MVME167 card and upgrading an Option 11 IPE Module to an Options 21–81 IPE Module.

**Chapter 18: Acceptance testing** This chapter describes the various acceptance tests you can perform.

**Chapter 19: Single Terminal Access** This chapter describes how to configure the Meridian 1 system to support Single Terminal Access.

**Chapter 20: Ordering** This chapter lists field-replaceable items for both the IPE Module and Application Module.

*Note:* The term “Meridian 1” is used throughout this document, and refers to Meridian 1 and “Meridian 1-ready” systems (such as Meridian SL-1 style cabinets that have been upgraded).

## References

Refer to the following related documents:

- *Application Equipment Module Installation Guide* (NTP 553-3201-200)
- *Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide* (NTP 553-3211-510)
- *Application Module and Intelligent Peripheral Equipment Module Advanced Maintenance Guide* (NTP 553-3211-512)
- *Meridian Link/Customer Controlled Routing Engineering Guide* (NTP 553-3211-520)
- *Customer Controlled Routing User Guide* (P0747008)

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# Chapter 1: Meridian Link/CCR co-residency

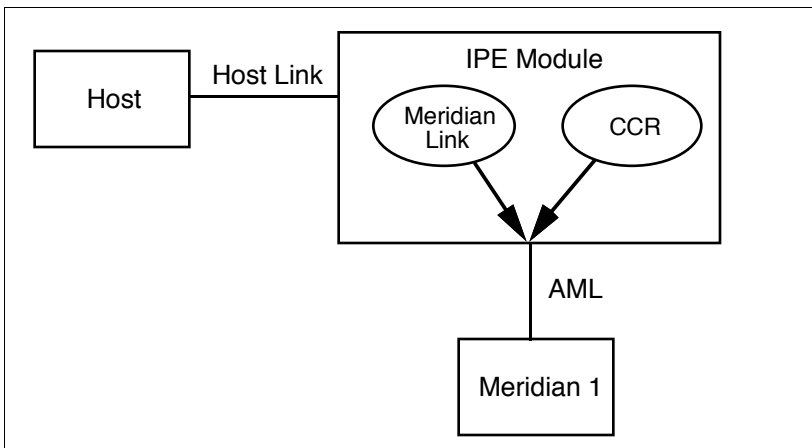
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## Co-residency overview

With Meridian Link Release 5C and CCR Release 3C, you can install both Meridian Link and CCR in a single IPE Module or Application Module. You should be aware that both applications use the same CPU, RAM, and hard disk, so you cannot expect the same performance from a co-resident application as you would get from a stand alone application.

As shown in Figure 1, Meridian Link and CCR applications communicate with the Meridian 1 through the same Application Module Link (AML), and at the same time.

**Figure 1**  
**Meridian Link/CCR co-residency**



This guide provides more detailed information on both the Meridian Link and CCR applications in the following chapters:

- Chapter 2, “Overview of Meridian Link”
- Chapter 3, “Overview of Customer Controlled Routing”

If you intend to activate both Meridian Link and CCR in an Application Module, the Application Module must have an MVME332XTS ACC card and an NT6D51AA transition card installed. Refer to Chapter 4, “Meridian Link/CCR hardware” for descriptions of these cards.

If you intend to activate both Meridian Link and CCR in an IPE Module, you should know that only two ports (7 and 8) will be available for CCR terminals or printers. Port 6 will be used for the Host Link. However, you can use LAN-based PCs as additional terminals. For more information, refer to “Ethernet LAN-based PC” later in this chapter.

**Note:** If you expect the maximum number of active CDN script associations at any one time to be 20 or fewer, you should consider installing CCR-S instead of the larger version (Large CCR). By doing so, you will enhance the processing power available to Meridian Link and CCR. Large CCR accommodates as many as 240 active CDN script associations at any one time.

For more information about Meridian 1 configuration changes for co-resident systems, refer to “Configuring the VSID, HSID, and AML prompts” in Chapter 12, “Meridian 1 Configuration for Meridian Link/CCR.”

## Keycode

IPE or Application Module software may or may not be pre-loaded:

- If the module is shipped to the United States, Europe, or Japan, the software is likely to be already loaded.
- If the module is shipped to a Caribbean or Latin American location, to Canada, or to the Asia Pacific region, the software may *not* be loaded.

If the software is preinstalled, a special keycode activates only the ordered application or applications during installation. When the module is installed at your site, you must enter a keycode to activate the correct application or applications before you can configure the new module. You also need a keycode anytime you upgrade to a new software release.

A keycode consists of 20 alphanumeric characters divided into five groups of four characters each. This keycode is obtained from Northern Telecom and defines the features and hardware configuration purchased by the customer. *A keycode label is attached to your application tape, and a label is provided as a loose item.* If you require new features or capacities, you must obtain a new keycode.

In each system operation, the software prompts the operator for the appropriate group of alphanumeric characters within the keycode necessary to perform that operation. Keycodes are matched to serial numbers, and only one keycode is necessary to perform multiple system operations. The system software compares the parameters that the keycode defines with the new configuration and the serial number during a system operation. If an exact match is not found, the keycode will not work and will be rejected.

If the keycode is rejected, you may reenter the keycode (if it was entered incorrectly) or reboot the system into service, because the system has not been altered during the attempt to use the rejected keycode. However, if a keycode is rejected during conversion, you must either complete the operation or restore the old operating system. For more information, refer to Chapter 14, “Software installation, upgrade, and update procedures.”

## Ethernet LAN-based PC

Meridian Link and CCR co-residency also provides support for an Ethernet LAN-based PC. This networking service is included for all Meridian Link and CCR customers.

**Note:** Support for an Ethernet LAN-based PC should not be confused with support for an Ethernet LAN-based host. For more information on Ethernet LAN-based host connections, refer to “Ethernet LAN-based host” in Chapter 2, “Overview of Meridian Link.”

This feature allows users to log in to an IPE Module or Application Module, and work with CCR scripts or perform OA&M tasks remotely from a PC. To use this feature, a local area network (LAN) must be installed between the Ethernet LAN-based PC and the Meridian Link/CCR IPE Module or Application Module. Each node must have the Network Service Extension (NSE) software running to provide TCP/IP (Transmission Control Protocol/Internet Protocol) service.

Although this feature is designed to meet CCR requirements, it provides a networking option for the Meridian Link application. With the minimum configuration offered by Northern Telecom, Meridian Link customers may use the Ethernet LAN-based PC to perform administrative tasks remotely.

The Ethernet LAN-based PC connection is compatible with IEEE802.3 Ethernet Standards and Ethernet II Standards using 10-based T, 10-based 2, 10-based 5, and fiber optics.

Ethernet support is automatically enabled during application installation. All NSE files will be loaded to the hard disk, but only those customers who purchased the service option will be able to configure the NSE. To configure the NSE, see Procedure 8 in Chapter 14, “Software installation, upgrade, and update procedures.”

**Note:** If you do not intend to provide an Ethernet LAN-based PC on your system, you should disable this support during application installation (you do this by entering the appropriate keycode). By disabling LAN-based PC support, you increase the processing power available to Meridian Link and CCR.

The Ethernet LAN-based PC must

- be fully compatible with an IBM PC (AT or higher)
- have a 20-Mbyte hard disk or larger
- have 1 Mbyte of RAM with at least 384 Kbytes free
- contain an Ethernet LAN adapter card that is ODI, NDIS, ASI, or packet driver compatible
- have a VGA or EGA color monitor and card with at least a 256-Kbyte buffer

The PC must contain

- Microsoft MS-DOS, Version 5.0 or higher
- FTP Software Inc.'s PC/TCP for DOS 2.05 or higher

In addition, the PC must contain one of the following terminal emulation packages:

- Walker, Richer & Quinn Inc.'s Reflection 2 for Windows (version 4.11 or later) with Telnet Connect for PC (version 1.1 or later)
- FTP Software Inc.'s Wtnvt program (version 2.3 or later)
- Wollongong Group's Pathway Access for Windows 3.0

**Note:** Windows applications also require Microsoft Windows; refer to the Windows application for the version required.

Northern Telecom has tested and supports the following LAN adapter cards:

- 3COM Etherlink II/MC
- 3COM Etherlink II
- 3COM Etherlink III

Other cards supported by FTP Software Inc.'s PC/TCP Kernel for DOS 2.05 or higher and compliant with Industry Standard Open Driver Specifications may also work.



For Ethernet LAN support, Application Modules must contain:

- an MVME167-02 SBC card
- an MVME712M transition card
- a generic I/O panel
- NT7D47DA and NT7D47EA cables

For more information about installing the NT7D47DA and NT7D47EA cables, refer to Procedure 28: Installing the cables for Ethernet LAN support (Application Module) in Chapter 17, “Hardware upgrade.”

For more information about the MVME167-02 card, the MVME712M transition card, and the generic I/O panel, refer to Chapter 4, “Meridian Link/CCR hardware.”

If an IPE Module or an Application Module is removed from the network, the remaining modules and PCs that used to have access must be informed of the disconnection. How to remove the IPE Module or Application Module entry from the accessing database depends on the TCP/IP software used on the PC.

When you disconnect the IPE Module or Application Module from the network, you must use the maint command stopNSE to disable the NSE software, or error messages will appear on the system console.

## **Module address and module name**

Meridian Link allows a personal computer connected to an Ethernet LAN to be used as a maintenance terminal for an IPE Module or Application Module also connected to the LAN. To use this feature, you must tell Meridian Link

- where the IPE Module or Application Module is located in the network (the module address)
- how the IPE Module or the Application Module can be identified (the module name)

The module address is a 4-byte (32-bit) address expressed as four decimal numbers separated by dots (such as 123.45.68.8). The module name can have as many as eight alphanumeric characters.

See your network administrator for more information on creating a module address and a module name.

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## Chapter 2: Overview of Meridian Link

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Meridian Link is an application that allows a Meridian 1 system to exchange information with a host computer so that users can integrate the capabilities of both into a business application. An order desk clerk, for example, can see information about an incoming call (for example, the caller's name, address, and calling history) on a computer screen while the telephone is still ringing.

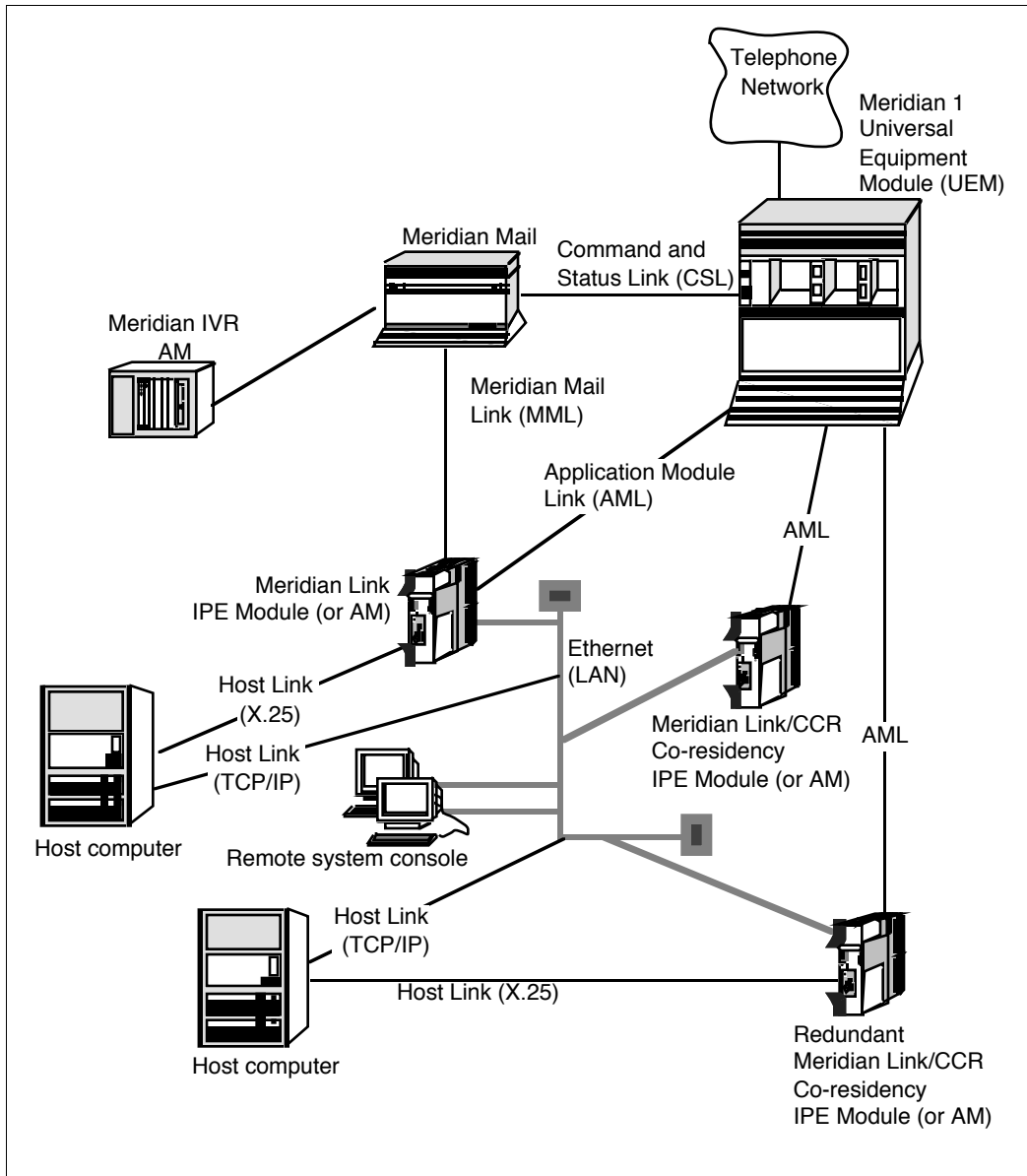
An optional connection to a Meridian Mail system enables the host to control voice-processing applications. For example, the host application can intercept a call and ask the caller for information before routing the call to the appropriate order desk.

Principal hardware components used by Meridian Link are

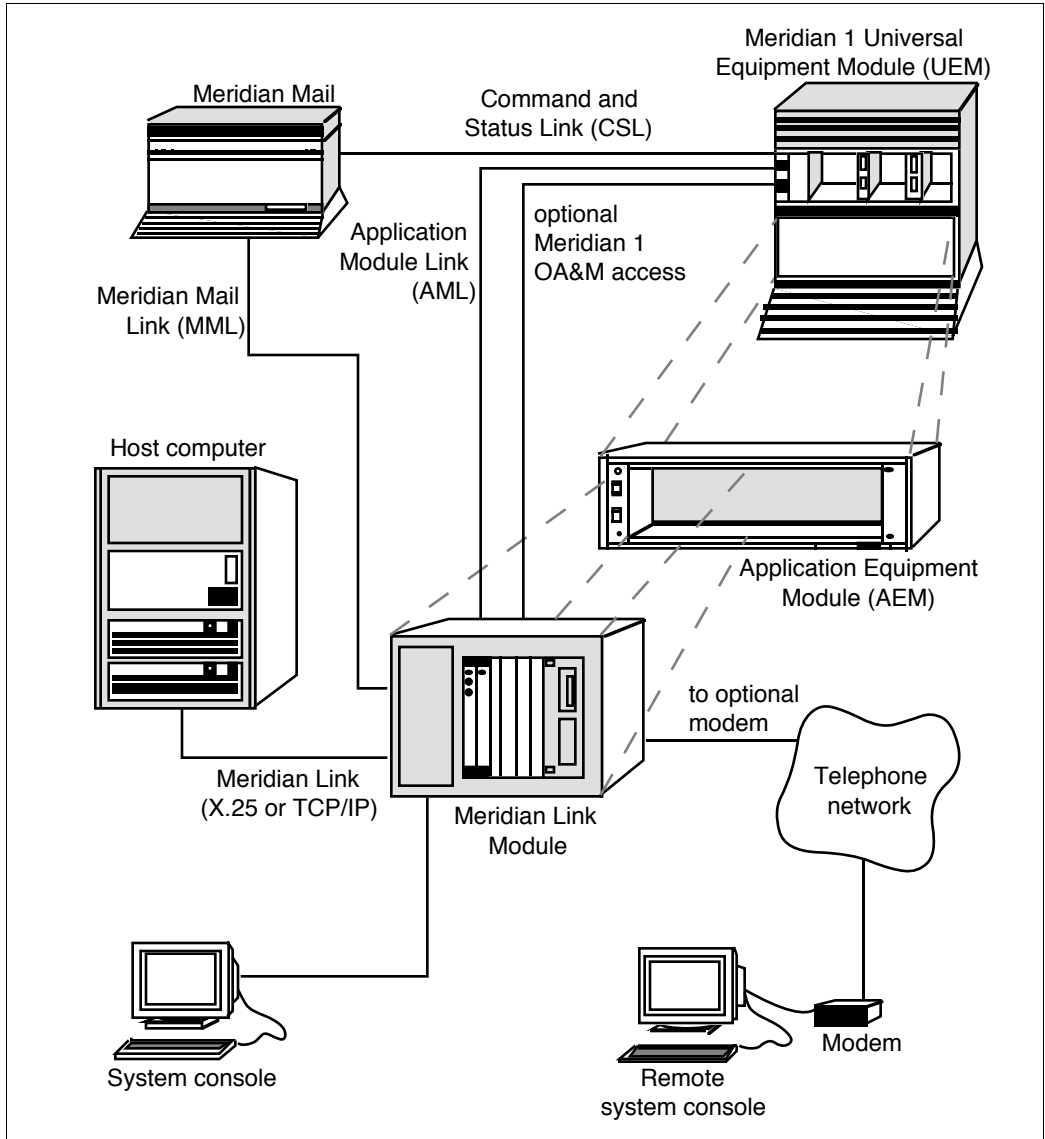
- a Meridian 1 system
- a computer or network of computers that runs the business application
- an Intelligent Peripheral Equipment (IPE) Module or an Application Module, which contains the Meridian Link application
- (optionally) a Meridian Mail system, to provide voice processing if required

Figure 2 shows the hardware components for an IPE Module, while Figure 3 shows the hardware components for the Application Module.

**Figure 2**  
**Meridian Link hardware connections (IPE Module)**



**Figure 3**  
**Meridian Link hardware connections (Application Module)**



Connecting these hardware components requires two (optionally three) signaling links:

- **Link 0** is an Application Module Link (AML), which connects the Meridian 1 system to the IPE Module or the Application Module.
- **Link 1** is a Host Link (or Meridian Link), which connects the host computer to the IPE Module or the Application Module. This Host Link can be implemented as a dedicated X.25 link supporting a single host computer or as a TCP/IP Ethernet LAN link supporting as many as 16 Meridian Link applications.

*Note 1:* If both the Meridian Link (using TCP/IP) and CCR applications are running, the Meridian Link third-party application can support only up to 15 Meridian Link applications.

*Note 2:* Any mlusr administration sessions requiring association IDs will reduce the number of association IDs available for Meridian Link applications. For example, if your system has eight association IDs registered to Meridian Link applications and then you register two association IDs for mlusr administration, your system will have six association IDs available (five, if CCR is running).

*Note:* If you have registered all 16 association IDs (15 if CCR is running) to Meridian Link applications, two overflow association IDs are available for mlusr administration only.

- **Link 2** is (optionally) a Meridian Mail Link (MML), which connects a Meridian Mail system to the IPE Module or the Application Module.

In addition, the IPE Module and the Application Module provide an interface for a system console, which enables you to perform administration and maintenance. A port that is designed to be connected to a modem allows you to perform these activities from a remote location.

The key software required to make these hardware components and links work together is the Meridian Link application, which resides in the IPE Module or Application Module.

## Meridian Link application

The Meridian Link application enables a host computer to control and monitor telephone functions, such as making a call, answering a call, tracking calls as they move through the Meridian 1 system, and conducting Interactive Voice Response (IVR) sessions with a call.

To provide the required communication, Meridian Link passes messages back and forth between a host computer and the Meridian 1 system, and between a host computer and Meridian Mail system, through the Meridian Link application in the IPE Module or the Application Module.

A customer application can use Meridian Link messages to

- monitor calls presented to, answered at, and released from phone sets, including Automatic Call Distribution (ACD) agents
- set an agent's state (login, MSB, RDY)
- set CFWD (call forward all calls) for an associated set (AST)
- toggle a telephone message indicator (MWI)
- monitor the activity of an associated set
- make, answer, and release calls on behalf of an associated set
- transfer and set up conference calls on behalf of associated sets and AST ACD agents
- control the routing of a call based on the number dialed (Dialed Number Identification Service or DNIS) or the number from which the call is placed (Automatic Number Identification or ANI, Calling Line Identification or CLID), the time of day, the incoming trunk, and so on
- control a Host Enhanced Voice Processing (HEVP) session to play voice prompts and collect Dual Tone Multi-Frequency (DTMF) touch-tone digits to read the caller's response

## Operating system overview

The IPE Module and the Application Module provide the base operating system (BOS) software. BOS is release 3 version 7.1 of UNIX System V for 68000-family CPUs. For advanced users, the BOS tape contains online operating-system information in the form of manual (MAN) pages.

## New with Meridian Link Release 5C

The Meridian Link Release 5C introduces the following new features:

- redundant Meridian Link
- dual VAS ID
- expanded DNIS support
- SFN (login) message with agent ID

**Redundant Meridian Link** This feature implements a second Meridian Link between the Meridian 1 and the host to increase the reliability of the CTI interface. In normal operation, one of the Meridian Link modules is active while the other is in warm standby mode. In the event of a failure (for example, the AML goes down or the active Meridian Link crashes), a switch-over to the redundant Meridian Link occurs automatically.

**Dual VAS ID** Meridian Mail (MMail) and Meridian Link communicate with Meridian 1 through the Application Module Link (AML). In the ACD Data Block, we associate the MMail ACD-DN with MMail through a VAS ID for the corresponding AML. AML is defined per ACD DN basis. Currently, only one VAS ID (for MMail) can be associated to an MMail ACD-DN. Hence AML messages are communicated only to the MMail for any event on MMail ports. The Dual VAS ID feature offers the facility to have MMail and Meridian Link to be associated with an MMail ACD-DN so that AML messages would flow to both MMail and Meridian Link.

**Expanded DNIS support** This feature allows an ACD agent to identify a particular product the caller is interested in via the dialed number presented to the agent. A third party application uses this DNIS number to display product information on an agent's screen enabling the agent to answer the call with correct responses. With Meridian Link 5C, up to 31 DNIS digits are supported. X11 Release 24 is required to support greater than a seven-digit DNIS. Prior to Release 24, only seven digits were supported.



**SFN (login) message with agent ID** This feature sends an unsolicited message to the host application when an AST/Acquired agent logs in by manually pressing the MSB key on the ACD set or by invoking the ACD set feature through the Set Feature Invocation (Login) message. The existing SFN Login message has been enhanced to provide an optional four-digit Agent ID at the time of logging, enabling the agent to log in at different positions.

*Note:* X11 Release 24 is required to support this feature.

## Link overview

Although Meridian Link effectively provides a single link between the host computer and the Meridian 1 system, from an administrative and maintenance standpoint there are actually three links.

**Link 0** The link between the IPE Module or Application Module and Meridian 1 is called link 0 or Application Module Link (AML).

**Link 1** The link between the IPE Module or Application Module and the host computer is called link 1, the Host Link, or the Meridian Link.

**Link 2** The link between the IPE Module or Application Module and Meridian Mail is called link 2 or the Meridian Mail Link (MML).

## AML and the Host Link (or Meridian Link)

The AML (link 0) uses the LAPB protocol to transfer command and status messages, primarily to perform call-processing functions. The Host Link or Meridian Link (link 1) uses an X.25 switched virtual circuit or a TCP/IP protocol to transfer application messages.

In data communication terms, the Meridian Link interface begins with the physical (RS-232) layer, upon which the link (LAPB) and network (X.25 or TCP/IP) layers are established. Messages are then sent across the link between the host computer and Meridian 1 at the application layer level.

If the link uses an X.25 or TCP/IP connection, the host application communicates with the Meridian 1 switch using Meridian Link formatted messages.

**Note:** When setting up a redundant Meridian Link, two communication paths must be set up to two separate Meridian Link modules. This may involve two X.25 ports or two TCP/IP addresses.

## Meridian Mail Link

The MML is an optional asynchronous link that connects the IPE Module or Application Module to a Meridian Mail system running software version MM8 (or later) with the Access Enable option. This link allows voice processing messages to be used.

## Diagnostic tools

For diagnosing link problems, you can use the loopback and continuity commands to test link 0 and link 1. You can also use link traces, system logs, console messages, and other tools to diagnose hardware, software, and link problems. For more detailed information on diagnosing problems, refer to the *Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide* (NTP 553-3211-510) and the *Application Module and Intelligent Peripheral Equipment Module Advanced Maintenance Guide* (NTP 553-3211-512).

If you are an advanced technical user of the IPE Module or Application Module, you have access to the following diagnostic tools, which provide extra maintenance capabilities:

- **Remote maintenance access** This enables a technician to dial into the system from a remote site in order to perform troubleshooting procedures.
- **Standalone System Interactive Diagnostics (SSID) software** This is for testing many of the hardware components when the application software is not running.

## System console and maintenance console

You can use a customer-supplied console to enter OA&M commands to the IPE Module or the Application Module. The console should be an asynchronous ASCII terminal that is 100 percent compatible with ANSI and DEC VT220. You can use an IBM-compatible personal computer running Reflection 4+.

An NT1R03D cable connects the customer-supplied console to the IPE Module. An NT7D61 External I/O cable or a customer-supplied 9-pin-to-25-pin cable connects the customer-supplied console to the Application Module. Refer to Chapter 9, “Meridian Link/CCR interface cabling” for more information.

If you configure the optional conshare capability available to an IPE Module or an Application Module, you can access the Meridian 1 input/output programs from the Meridian Link console.

## Meridian Link administration and maintenance

As a Meridian Link administrator, you can use commands to do the following:

- enable and disable the link between the host and the IPE Module or the Application Module (link 1), the link between the IPE Module or the Application Module and the Meridian 1 (link 0), and the link between the IPE Module or the Application Module and Meridian Mail (link 2)
- configure link 0, link 1, and link 2
- display the status of a link or all links
- display protocol statistics for a link
- trace messages flowing on the links
- display messages flowing on the links on the system console
- filter particular messages

You can also use commands to do the following:

- back up and restore configuration and data files
- display how much disk space has been used up
- verify files
- delete files
- power down or reset the IPE Module or Application Module

Although the IPE Module and the Application Module arrive with the software already installed, you can reinstall the software from tapes that are supplied with the IPE Module or the Application Module (if it is necessary to replace or reformat the hard disk).

## Host support service requirements

The Meridian 1 system requires specific software to be installed in the Meridian 1, and specific software to be installed in the IPE Module or Application Module. Messages used by Meridian Link are divided into related groups, called services in the IPE Module or Application Module. The services required depend on the type of host computer. For more specific information, refer to the “Host” section later in this chapter.

## Meridian 1

This section provides overviews of the Meridian 1 hardware and software required for Meridian Link.

### Hardware overview

One of the following system types must be installed and operational:

- Meridian 1 system options 11, 11C, 21, 51, 51C, 61, 61C, 71, 81, or 81C (not all system options are supported in all markets)
- Meridian SL-1 systems (upgraded) capable of operating on Generic X11 Release 16, or later, software

The Meridian 1 system must have particular cards installed:

- one of the following interface cards for the AML connection:

- QPC513 Enhanced Serial Data Interface (ESDI) card (vintage G or later)
  - NT6D80 Multi-purpose Serial Data Link (MSDL) card
  - (Option 11 only) NTAK02AB Serial Data Interface/D-Channel Interface (SDI/DCH) card
  - If using a redundant Meridian Link, two AML connections are required.
  - a Serial Data Interface (SDI) card if conshare capability is desired
- Note:** Conshare capability, which gives you access to Meridian 1 input/output programs from the Meridian Link console, is recommended to allow for more effective support for your system.

Option 11 systems support an SDI port on any of the following cards:

- the CPU/CONF card (NTAK01AB)
  - the SDI/DCH card (NTAK02AB)
  - the TDS/DTR card (NTAK03AB)
- for optional voice-processing capability, a Meridian Mail system
  - limited-distance modems for communications facilities if the IPE Module or the Application Module is greater than 15 m (50 ft) from the host computer

An Application Equipment Module (AEM), if present, must be installed in one of the following configurations:

- a stand-alone AEM column or Meridian SL-1 style cabinet
- a module in a Meridian 1 column

Refer to *Application Equipment Module Installation Guide* (NTP 553-3201-200) for AEM installation procedures.

The following table shows hardware supported for the Meridian Link and CCR applications.

**Table 1**  
**Hardware supported for Meridian Link and CCR**

<b>Application</b>	<b>MVME147 AM</b>	<b>MVME167 AM</b>	<b>IPE Module</b>
Meridian Link 5C with X.25	Yes**	Yes	Yes
Meridian Link 5C with TCP/IP	No	Yes*	Yes
Meridian Link 5C and CCR 3C	No	Yes*	Yes

\* This configuration is supported provided it is Ethernet accessible.  
Upgrading the MVME147 AM with an MVME167 card is not equivalent to an MVME167 AM therefore Meridian Link 5C using TCP/IP transport is not supported.

\*\* Refer to the *Meridian Link/Customer Controlled Routing Engineering Guide* (NTP 553-3211-520) for details on the MVME147 CPU card.

## Software overview

The Meridian 1 must be equipped with the following release of software:

- X11 Release 17 or later for Meridian 1 systems using Meridian Link Release 4
- X11 Release 20 or later for all Option 11 systems (X11 Release 18 will be supported in Europe)
- X11 Release 16.82G or later for Options 21–81 for international markets
- X11 Release 19 or later for the Host Enhanced Routing, Host Enhanced Voice Processing, and Unique Call ID features of Meridian Link Release 4, and for Single Terminal Access (STA) support
- X11 Release 23 or later is required to support the Redundant Meridian Link and Dual VAS ID features
- X11 Release 24 or later is required for the Expanded DNIS support and Agent Login ID features

The following X11 software packages constitute Meridian Link:

- For Option 11:
  - Advanced Application Software (contains packages 153 and 209)
- For Options 21–81:
  - Application Module (package 209)

Prerequisites for Meridian Link operations are

- Meridian Mail Link (package 35)
- Command and Status Link (package 77)

These software options may be bundled in various marketing packages that may vary by market and by X11 software release.

Following is a minimum software requirement compatibility matrix for the Meridian Link/CCR application.

**Table 2**  
**X11 software compatibility matrix**

Application	Rls. 17	Rls. 18	Rls. 19	Rls. 20	Rls. 21	Rls. 22-24
Meridian Link 4B	Yes	Yes	Yes	Yes	Yes	Yes
Meridian Link 4B and CCR 3B	Yes	Yes	Yes	Yes	Yes	Yes
Meridian Link 5	No	No	Yes	Yes	Yes	Yes
Meridian Link 5 and CCR 3B	No	No	Yes	Yes	Yes	Yes
Meridian Link 5 Upissue and CCR 3B	No	No	Yes	Yes	Yes	Yes
Meridian Link 5C and CCR 3C	No	No	Yes	Yes	Yes	Yes

Other software options may be required depending on specific application needs. These may include options for ISDN and ACD, for example.

For information about software package prerequisites, refer to *X11 Features and Services* (NTP 553-3001-305).

Meridian Link does not support pretranslation for outbound calls if the HVS (Hospitality Voice Services), package 179, is installed.



## Host

This section describes the services and software that Meridian Link requires to support the connection to the host computer. Normally these services are bundled in marketing packages that may vary by market.

### Meridian Link service requirements

Meridian Link requires specific software services to be installed in the IPE Module or Application Module to support the host connection. The services required depend on the type of host computer.

X.25 and TCP/IP services are compatible with commonly available host computers (including those from Hewlett Packard, IBM Corporation, and Tandem Corporation). At least one of the following services is required:

- Inbound Call Management (service 97) supports inbound call applications such as telemarketing and customer service (includes transfer and conference). This service does not support outbound applications.
- Outbound Call Management (service 98) supports outbound call applications such as power or predictive dialing (includes transfer and conference). This service does not support inbound applications.
- Host Enhanced Routing (service 100) supports the RouteRequest and RouteCall messages, giving the host application the ability to route incoming calls.
- Host Enhanced Voice Processing (service 101) supports voice-processing capability for applications.

Service No.	Description
95	Obsolete
96	Obsolete
97	Inbound Call Management
98	Outbound Call Management
100	Host Enhanced Routing
101	Host Enhanced Voice Processing

## Host connection considerations

The link to the host computer should be installed and configured following the host manufacturer's recommendations. The host may establish one of the following, depending on the type of host computer:

- an X.25 Switched Virtual Circuit (SVC) connection over a serial RS-232 (up to 19.2 kbps) physical interface
- TCP/IP connection over an Ethernet LAN

If the host computer is located more than 15 m (50 ft) from the IPE Module or Application Module with an RS-232 connection, limited-distance modems must be used at each end to carry the data signal (using standard data communication techniques). You may select and install limited-distance modems to connect the host computer and the IPE Module or Application Module. Nortel neither supplies nor recommends a particular make or model of modem for this purpose. If diagnostic activities indicate that problems exist with the modems, Nortel support personnel will recommend that the customer call in service representatives for the modem equipment.

*Note:* When setting up a redundant Meridian Link, two host connections are required, and two AML links must be configured on the Meridian 1. Also, two communication paths (either two X.25 ports or two TCP/IP addresses) must be set up to connect with two Meridian Link modules.

## Ethernet LAN-based host

To use an Ethernet LAN-based host computer, a local area network (LAN) must be installed between an Ethernet LAN-based host computer and the Meridian Link/CCR IPE Module or Application Module. Each IPE Module or Application Module must have the Network Service Extension (NSE) software running to provide TCP/IP service.

The Ethernet LAN-based host connection is compatible with IEEE802.3 Ethernet Standards and Ethernet II Standards using 10-based T, 10-based 2, 10-based 5, and fiber optics.

Ethernet support is automatically enabled during application installation. All NSE files will be loaded to the hard disk for configuration by the customer during installation. To configure the NSE, see Procedure 8 in Chapter 14, “Software installation, upgrade, and update procedures.”

**Note:** If you do not intend to provide Ethernet LAN-based communications on your system, you should disable the support during application installation (you do this by entering the appropriate keycode). By disabling this support, you increase the processing power available to Meridian Link and CCR.

For Ethernet LAN support, Application Modules must contain

- an MVME167-02 SBC card
- an MVME712M transition card
- a generic I/O panel
- NT7D47DA and NT7D47EA cables

For more information about installing the NT7D47DA and NT7D47EA cables, refer to Procedure 28: Installing the cables for Ethernet LAN support in Chapter 17, “Hardware upgrade.”

For more information about the MVME167-02 card, the MVME712M transition card, and the generic I/O panel, refer to Chapter 4, “Meridian Link/CCR hardware.”

If an IPE Module or an Application Module is removed from the network, the remaining modules and PCs that used to have access must be informed of the disconnection. How to remove the IPE Module or Application Module entry from the accessing database depends on the TCP/IP software used on the PC.

When you disconnect the IPE Module or Application Module from the network, you must use the maint command stopNSE to disable the NSE software, or error messages will appear on the system console. For more information on the stopNSE command, refer to the *Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide* (NTP 553-3211-510).

## Meridian Mail software requirements

A Meridian Mail system can be connected to the IPE Module or Application Module to provide voice-processing capability to an application based on Meridian Link. The link between the IPE Module or Application Module and the Meridian Mail system is called the Meridian Mail Link (MML).

The Meridian Mail system must be equipped with Release 8 (or later) software with the Access Enable option, and Meridian 1 must be equipped with X11 Release 19 (or later) software.

## Operations, Administration, and Maintenance (OA&M)

The IPE Module and the Application Module also provide a basic Operations, Administration, and Maintenance (OA&M) command interface, which allows you to perform functions such as the following:

- access and configure applications (start or stop applications, configure the application to start automatically and enter the application interface)
- power down the system safely
- schedule and perform system backup and restore operations
- run diagnostics
- change user passwords
- run traces on links
- access the Meridian 1 console, if console-sharing capability is configured
- look at system information (system version, system logs)

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## Chapter 3: Overview of Customer Controlled Routing

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Customer Controlled Routing (CCR) is a product that enables you to control and route Automatic Call Distribution (ACD) calls entering your Meridian 1 system. For example, for an incoming ACD call, you can provide a specific recorded announcement, music, or both, before assigning the call to an agent.

Principal hardware components used by CCR are

- a Meridian 1 system
- an Application Module or Intelligent Peripheral Equipment (IPE) Module (which contains the CCR application, service 99)

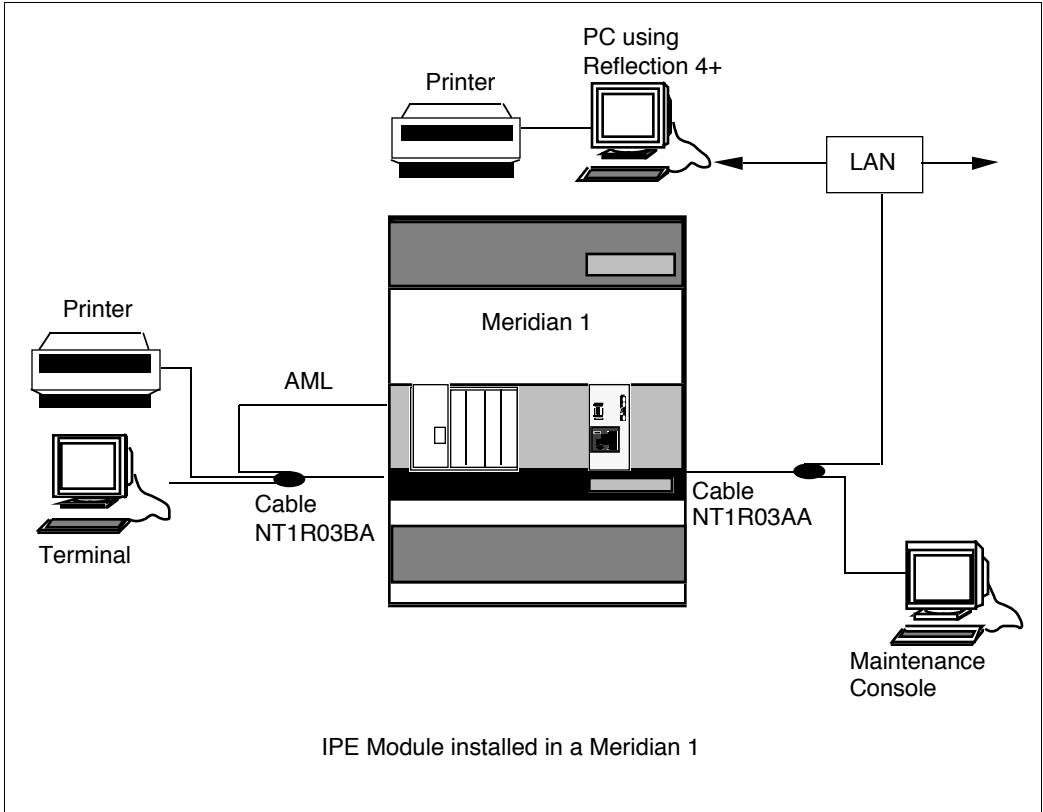
Connecting these hardware components is a signaling link called the Application Module Link (AML), sometimes referred to as a Command and Status Link (CSL).

In addition, the IPE Module or Application Module provides an interface for a system console, which enables you to perform administration and maintenance. A port that is designed to be connected to a modem allows you to perform these activities from a remote location.

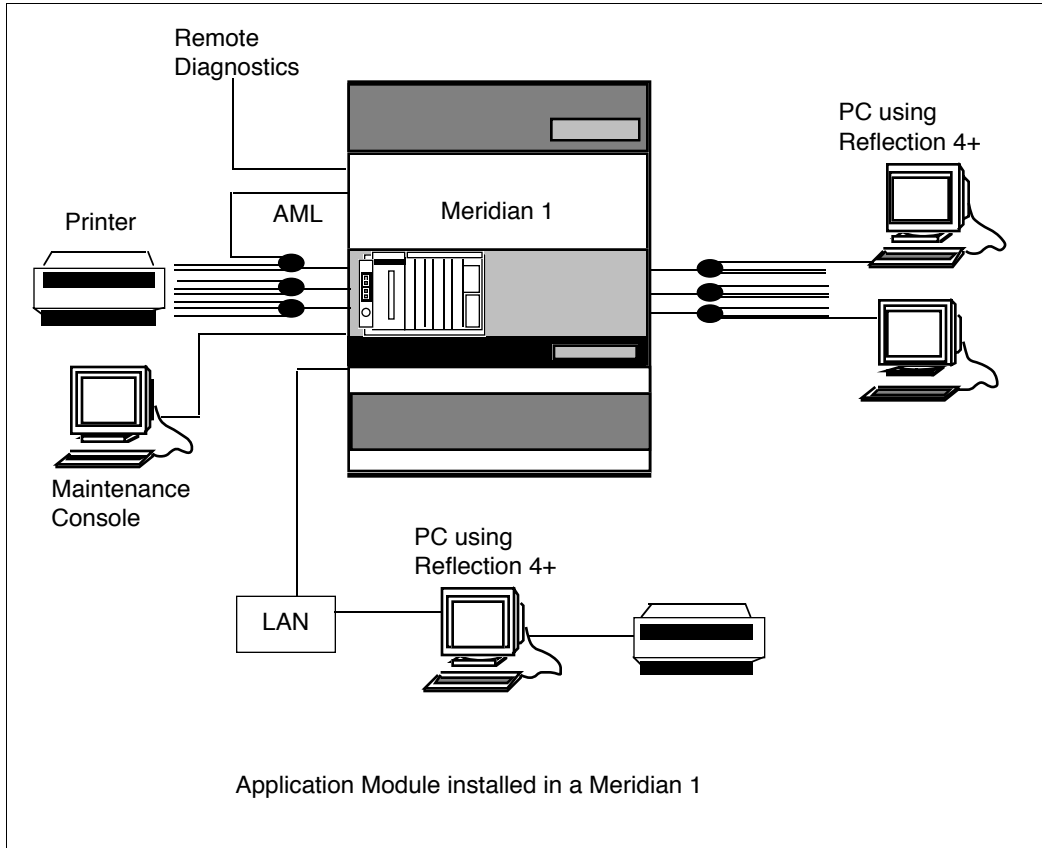
CCR also provides for as many as three terminals or printers on an IPE Module (depending on the applications installed) or eight terminals or printers on an Application Module. You can increase the number of terminals by adding LAN-based PCs.

Figures 4 and 5 show how these hardware components are connected.

**Figure 4**  
**CCR hardware connections (IPE Module)**



**Figure 5**  
**CCR hardware connections (Application Module)**



The key software required to make these hardware components and links work together is the CCR application, which resides in the IPE Module or the Application Module.

## CCR application

CCR works with the Automatic Call Distribution (ACD) feature on your Meridian 1 to give you more control over the handling of incoming calls. Each call coming through an ACD queue can be given individualized handling and treatment. CCR provides specialized treatments for different types of calls and, at the same time, pools your ACD resources to best handle your call load.

CCR accomplishes this using a special kind of ACD Directory Number (DN) called a Control DN (CDN), which is assigned to each incoming call. Each CDN defined in Meridian 1 can have a unique series of call-handling instructions applied to it. These instructions are contained in a script, which is maintained using the CCR application.

The script determines how a call will be routed to the appropriate destination and how that call is treated while waiting in an ACD queue. Scripts can be as simple or as sophisticated as your application requires and are not limited to a specific number of steps.

Using a script, you can, for example

- simultaneously queue a call to as many as eight ACD DNs, also referred to as ACD queues
- simultaneously assign a call a different priority level for each queue
- change priority levels, depending on special conditions such as the age of the call
- define recorded announcements, music, or both, for incoming calls
- determine how long a customer must wait before some action is taken

### **An example of CCR call handling**

A customer service organization typically receives calls from a number of different types of users. The organization may have different products that they sell and support, and they may also have an elite client list to which they provide special services.

These requirements can be handled using a single script that contains the following types of instructions:



- **For elite clients** Any incoming call coming from telephone number XXX or YYY goes into the ACD queue with a higher priority (using the Calling Line Identification, or CLID, feature).
- **Sales for all products** Any incoming call to DN 1234 goes into the ACD queue for the sales group.
- **Support for product X** Any incoming call to DN 2345 goes into the ACD queue for the product X support group.
- **Support for product Y** Any incoming call to DN 3456 receives a recorded announcement (RAN) regarding new product information before going into the ACD queue for the product Y support group.

## Key CCR concepts

This section describes terms used for CCR.

**Script** This is a collection of statements defining call routing and treatment.

**CDN** A Control DN is a special ACD DN, configured in Meridian 1, to which no agents are assigned. You must create a script to control calls in the CDN, otherwise the calls are put into the default mode. A script is associated with a CDN, so all calls entering a CDN are handled by the same script.

**Association** This is a mapping between a script and CDNs. The Association Table tells the system which script controls the calls entering a CDN.

**Variable** This is a user-defined name that represents a value or set of values. Variables, such as “after\_hours” representing the value “17:00 to 06:00,” are defined in the Variable Table.

**Profile** All CCR application users have a profile that defines their level of access to the system and the language they will use (French or English).

## Operating system

The IPE Module and Application Module provide base operating system (BOS) software. BOS is release 3 version 7.1 of UNIX System V for 68000-family CPUs. For advanced users, BOS contains online operating system information in the form of manual (MAN) pages.

## New with CCR Release 3C

CCR Release 3C introduces the following new features:

- expanded DNIS support
- support for 8 "Queue to" commands

**Expanded DNIS support** CCR can route and treat calls based on the DNIS. With CCR Release 5C, the DNIS digits supported have been expanded from seven digits to a maximum of 31 digits. X11 Release 24 is required to support more than seven digits.

**Support for 8 "Queue to" commands** This feature allows a call waiting for an available agent to be queued to up to eight different queues simultaneously. A call can be queued at each of the eight ACD DN's at the same priority or at different priorities, offering better customer service due to faster response times.

## Application Module Link

The Application Module Link (AML) (link 0) uses the LAPB protocol to transfer command and status messages, primarily to perform call processing functions.

## Diagnostic tools

Advanced technical users of the IPE Module or Application Module have access to the following diagnostic tools, which provide extra maintenance capabilities:

- **Remote maintenance access** This enables a technician to dial in to the system from a remote site to perform troubleshooting procedures.
- **Standalone System Interactive Diagnostics (SSID) software** This is used for testing hardware components when CCR is not running.

## System console and maintenance console

You can use a customer-supplied console to enter OA&M commands to the IPE Module or Application Module. The console should be an asynchronous ASCII terminal that is 100 percent compatible with ANSI and DEC VT220. You can use an IBM-compatible personal computer running Reflection 4+.

An NT1R03D cable connects the customer-supplied console to the IPE Module. An NT7D61 External I/O cable or a customer-supplied 9-pin-to-25-pin cable connects the customer-supplied console to the Application Module. Refer to Chapter 9, “Meridian Link/CCR interface cabling” for more information.

If you configure the optional conshare capability available to the IPE Module or Application Module, you can access the Meridian 1 input/output programs from the CCR console.

## CCR administration and maintenance

CCR provides an interface for a system console user and as many as eight other terminal users at one time. All users have access to basic OA&M commands and to the CCR application itself. But only one user can create, edit, install, associate, and access CCR data at a time.

CCR employs a full-screen, menu-driven interface that allows you to

- set up and maintain profiles for CCR application users
- create, modify, and verify scripts
- set up and maintain a list of variables that are used within scripts to make script maintenance easier
- set up and maintain associations between scripts and the CDNs defined on Meridian 1

## Consoles/printers

In addition to the system console, CCR can support as many as eight terminals or printers. The additional terminals allow as many as eight application users to have access to the CCR user interface at the same time, although only one user can change CCR data at a time.

**Note:** The IPE Module can support only a maximum of three terminals or printers; only two if CCR is co-resident with Meridian Link. However, you can increase the number of terminals by adding LAN-based PCs.

## Meridian 1

This section provides overviews of the Meridian 1 hardware and software required for CCR.

### Hardware overview

One of the following system types must be installed and operational:

- Meridian 1 system options 21, 51, 61, 71, or 81 (not all system options are supported in all markets)
- Meridian 1 system option 11
- Meridian SL-1 systems (upgraded) capable of operating on generic X11 Release 17, or later, software

The Meridian 1 system must be up and running, and have the following hardware installed:

- one of the following interface cards:
  - QPC513 Enhanced Serial Data Interface (ESDI) card (vintage G or later)
  - NT6D80 Multi-purpose Serial Data Link (MSDL) card
  - (Option 11 only) NTAK02AB Serial Data Interface/D-Channel Interface (SDI/DCH) card
- a Serial Data Interface (SDI) card if conshare capability is desired

**Note:** Conshare capability, which gives you access to Meridian 1 input/output programs from the IPE Module or Application Module console, is highly recommended to allow for more effective support for your system. If you want to access Meridian 1 and up to three other applications, the Single Terminal Access (STA) feature is available with X11 release 19 and greater. For more information on STA, refer to Chapter 19, "Single Terminal Access."

Option 11 systems support an SDI port on any of the following cards:

- the CPU/CONF card (NTAK01AB)
  - the SDI/DCH card (NTAK02AB)
  - the TDS/DTR card (NTAK03AB)
- limited-distance modems for communications facilities if the IPE Module or Application Module is greater than 15 m (50 ft) from the Meridian 1 or peripheral devices, such as terminals and printers

An Application Equipment Module (AEM), if present, must be installed in one of the following configurations:

- as a stand-alone AEM column (the configuration used with Meridian SL-1 style cabinets)
- as a module in a Meridian 1 column

Refer to *Application Equipment Module Installation Guide* (NTP 553-3201-200) for AEM installation procedures.

The following table shows hardware supported for the Meridian Link and CCR applications.

**Table 3**  
**Hardware supported for Meridian Link and CCR**

Application	MVME147 AM	MVME167 AM	IPE Module
CCR 3C	No	Yes	Yes
Meridian Link 5C and CCR 3C	No	Yes*	Yes

\* This configuration is supported provided it is Ethernet accessible. Upgrading the MVME147 AM with an MVME167 card is not equivalent to an MVME167 AM therefore Meridian Link 5C using TCP/IP transport is not supported.

### Software overview

The Meridian 1 must be equipped with one of the following software releases:

- Customer Controlled Routing: X11 Release 17 or later (Release 20 for all Option 11 systems) or X81
- Customer Controlled Routing with access to Interactive Voice Response (IVR) applications: X11 Release 18 (or later)

Following is a minimum software requirement compatibility matrix for the Meridian Link/CCR application.

**Table 4**  
**X11 software compatibility matrix**

Application	Rls. 17	Rls. 18	Rls. 19	Rls. 20	Rls. 21	Rls. 22-24
Meridian Link 4B and CCR 3B	Yes	Yes	Yes	Yes	Yes	Yes
CCR 3B	Yes	Yes	Yes	Yes	Yes	Yes
Meridian Link 5 and CCR 3B	No	No	Yes	Yes	Yes	Yes
Meridian Link 5 Upissue and CCR 3B	No	No	Yes	Yes	Yes	Yes
Meridian Link 5C and CCR 3C	No	No	Yes	Yes	Yes	Yes

The following software packages (and their prerequisites) are required for Customer Controlled Routing:

- Basic ACD (packages 40, 41, and 45)
- Command and Status Link (CSL) (package 77)
- Enhanced ACD Routing (package 214)
- Customer Controlled Routing (package 215)

- Interactive Voice Response (package 218) if the Hold In Queue for IVR feature is to be used
- Call ID (package 247) (requires X11 Release 19 or later)

The following software packages (and their prerequisites) are optional for Customer Controlled Routing:

- Dialed Number Identification Service (package 98)
- Automatic Call Distribution Package C (package 42)
- ACD Load Management (package 43)
- Automatic Call Distribution Package D (package 50)
- ACD Package D Auxiliary Link Processor (package 51)
- Integrated Services Digital Network Signaling (package 145)
- ISDN Primary Rate Access (package 146)
- ISDN Signaling Link (package 147)
- Multi-use Serial Data Link (package 222)

For information about software package prerequisites, refer to *X11 Features and Services* (NTP 553-3001-305).

CCR may take advantage of many other software packages if they are installed and configured.

### **Single Terminal Access (STA)**

Single Terminal Access allows a single terminal (an STA terminal) to be used as a maintenance terminal for the Meridian 1 system and for any subsystem connected to it (including an IPE Module or an Application Module) to perform all OA&M functions. For more information, refer to Chapter 19, “Single Terminal Access.”

The STA feature is supported on

- an IPE Module connected to a Meridian 1 Options 21–81 system
- an Application Module with an MVME167 card





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## Chapter 4: Meridian Link/CCR hardware

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Meridian Link and CCR hardware consists of either an IPE Module or an Application Module. This chapter describes both of these modules.

**Note:** If you require a redundant Meridian Link, an additional Meridian Link Module (either an IPE Module or an Application Module) must be installed.

Both the IPE Module and the Application Module use a base operating system (BOS), which supports Meridian Link and CCR. BOS is release 3 version 7.1 of UNIX System V for 68000-family CPUs. For advanced users who need more information, BOS provides operating system information in the form of online manual (MAN) pages.

### IPE Module

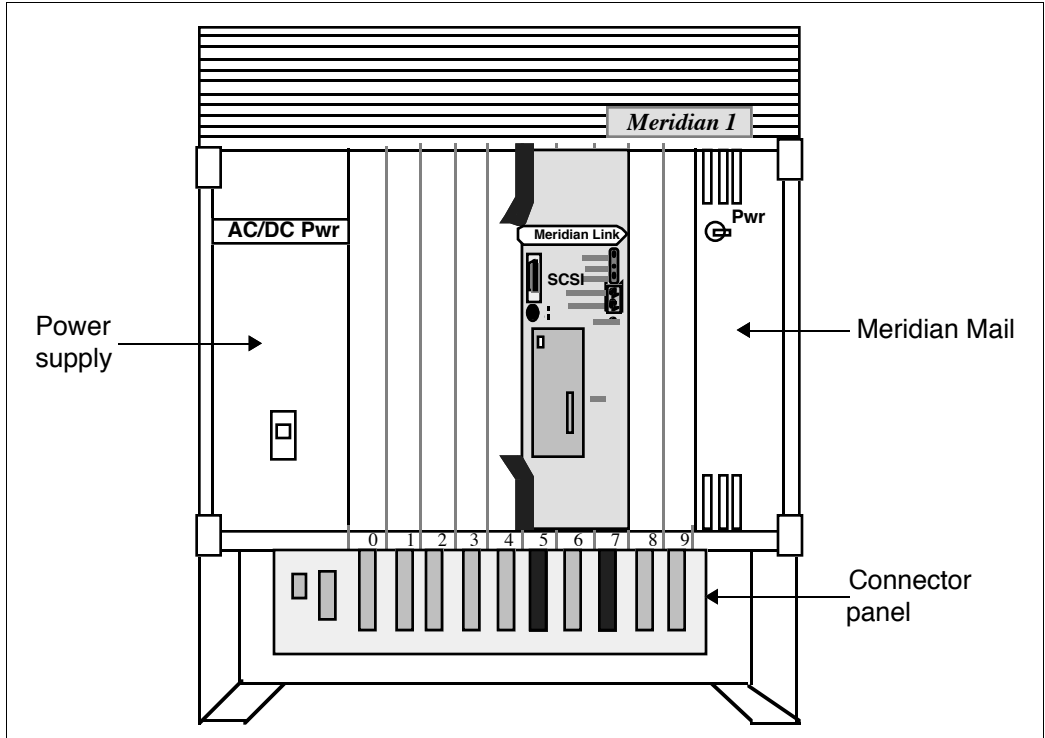
The IPE Module can be installed in a Meridian 1 Option 11 main cabinet or expansion cabinet, or in a Meridian 1 Options 21–81 IPE shelf.

In a Meridian 1 Option 11 system, the IPE Module occupies three consecutive slots in the main cabinet (Figure 6) or expansion cabinet (Figure 7). Those three slots must not include slot 1 (reserved for the SDI/TDS [NTAK03AA] card) or slots 10–12 in the main cabinet (reserved for Meridian Mail).

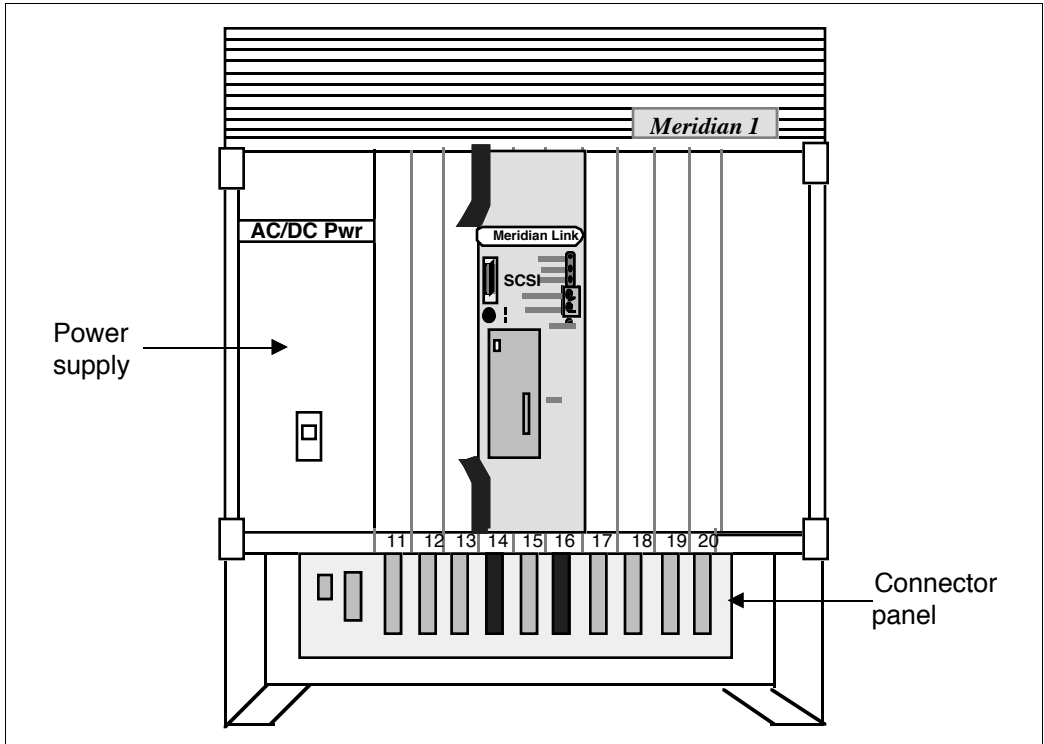
Power for the IPE Module comes from the cabinet's IPE backplane and consists of +5 V and –48 V.

Figure 6 illustrates the IPE Module occupying slots 5–7 of the Option 11 main cabinet. Figure 7 illustrates the IPE Module occupying slots 14–16 of the expansion cabinet.

**Figure 6**  
**Option 11 main cabinet**



**Figure 7**  
**Option 11 expansion cabinet**

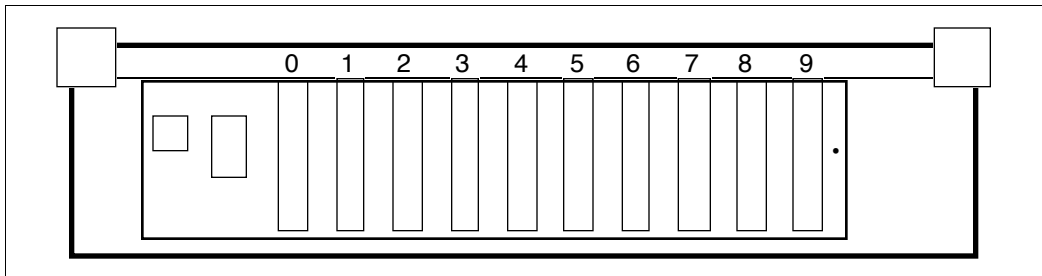


### Connector panel and I/O connectors (Option 11)

Underneath each cabinet of the Option 11 is a connector panel with ten numbered connector ports. Each connector port connects to the corresponding numbered slot directly above it, inside the cabinet. Figure 8 shows the connector panel for the main cabinet, and Figure 9 shows the connector panel for the expansion cabinet.

The I/O connectors for the IPE Module installed in an Option 11 system are standard, shielded, 50-pin tip-ring-type connector ports on the connector panel, which is located under the cabinet containing the module. The connector ports used depend on the slots occupied by the IPE Module. Tables 5 and 6 show the connector ports used for each possible location of the IPE Module. Figure 6 shows the IPE Module installed in slots 5, 6, and 7 of an Option 11 main cabinet. Table 5 shows that the cables are connected to connector ports J5 and J7.

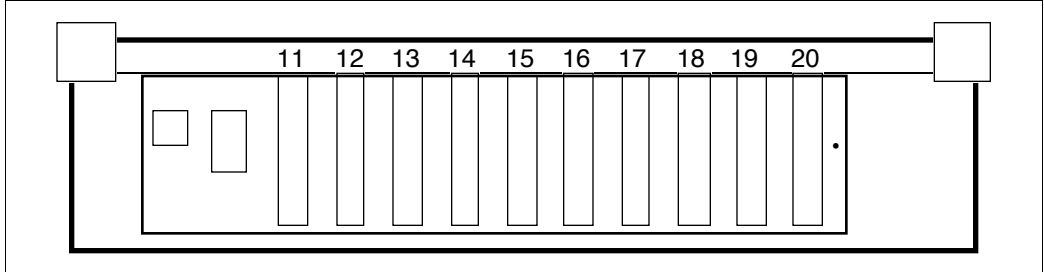
**Figure 8**  
Option 11 connector panel (main cabinet)



**Table 5**  
Option 11 IPE Module connectors used (main cabinet)

Slots occupied by IPE Module	Connector ports used
2, 3, 4	J2 and J4
3, 4, 5	J3 and J5
4, 5, 6	J4 and J6
5, 6, 7	J5 and J7
6, 7, 8	J6 and J8
7, 8, 9	J7 and J9

**Figure 9**  
**Option 11 connector panel (expansion cabinet)**



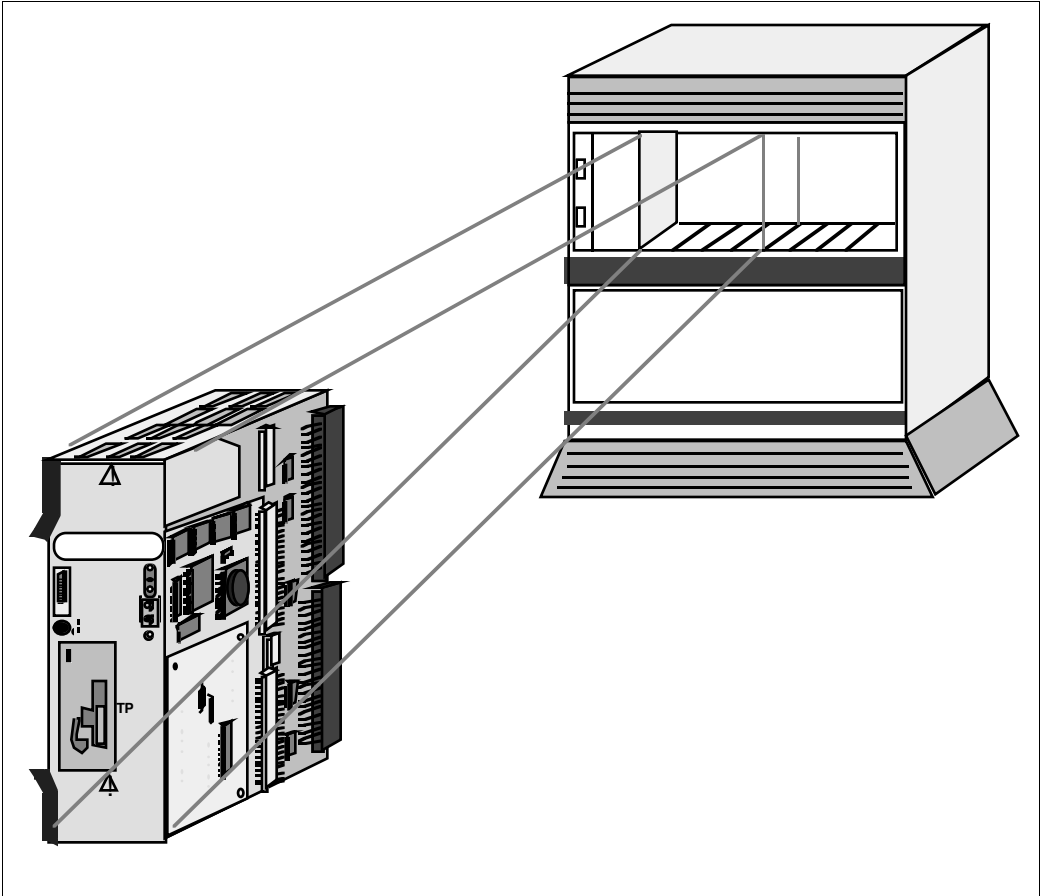
**Table 6**  
**Option 11 IPE Module connectors used (expansion cabinet)**

Slots occupied by IPE Module	Connector ports used
11, 12, 13	J11 and J13
12, 13, 14	J12 and J14
13, 14, 15	J13 and J15
14, 15, 16	J14 and J16
15, 16, 17	J15 and J17
16, 17, 18	J16 and J18
17, 18, 19	J17 and J19
18, 19, 20	J18 and J20

## IPE Module Options 21–81

In a Meridian 1 Options 21–81 system, the IPE Module occupies four consecutive slots on an IPE shelf (Figure 10). Power for the IPE Module comes from the shelf's IPE backplane and consists of +5 V and –48 V.

**Figure 10**  
Options 21–81 cabinet

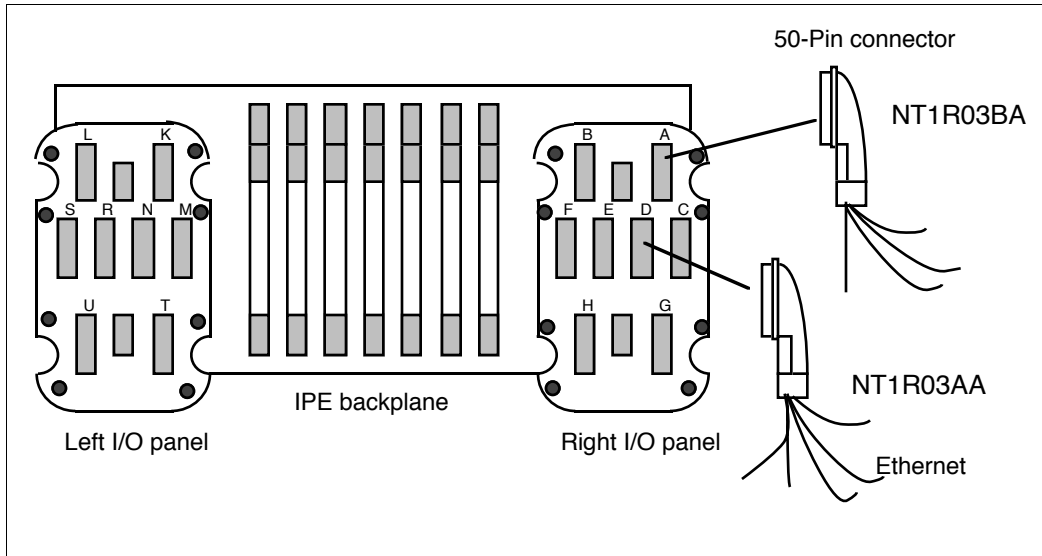


## Connector panel and I/O connectors (Options 21–81)

The I/O connectors for the IPE Module installed in an Options 21–81 IPE shelf are standard, shielded, 50-pin tip-ring-type connectors on one of the I/O panels in the rear of the IPE shelf containing the module. Each panel has ten connector ports. The I/O panel and connector ports used depend on the slots occupied by the IPE Module. Figure 11 shows the connector ports used for an IPE Module installed in slots 0–3 of an NT8D37 shelf. This figure is illustrative only; for specific information about the relationship between slots and connector ports, refer to Chapter 9, “Meridian Link/CCR interface cabling.”

**Note:** Older CE/PE or IPE shelves (vintages AA and DC) do not have fully cabled backplanes. They have one and a half cards per cable and therefore you must reroute backplane cables inside the CE/PE or IPE shelves before installing the IPE Module. For more information, refer to the section on “Backplane cable rerouting for Options 21–81 CE/PE and IPE backplanes” in Chapter 9, “Meridian Link/CCR interface cabling.”

**Figure 11**  
Options 21–81 IPE Module connectors (rear view)



## **IPE Module components**

The IPE Module (Figure 12) contains an SMM167 single board computer (SBC) card, a 240-Mbyte disk drive, a 600-Mbyte tape drive, and a CPU adapter card. Only the IPE Module as a whole is field-replaceable.

### **SMM167 single board computer (SBC) card**

This card, one of the Motorola MVME167 family, consists of the following:

- MC68040 microprocessor operating at 25 MHz
- 16 Mbytes of dynamic random access memory (DRAM)
- MC68882 floating point coprocessor
- shared dynamic random access memory (DRAM) with parity
- time-of-day clock and calendar with battery backup
- 128 kbytes of static random access memory (SRAM)

The SBC card provides the following interfaces:

- Small Computer Systems Interface (SCSI) bus interface with direct memory access (DMA) channel to control the disk/tape unit
- eight serial I/O ports with EIA-232-D buffers
- Ethernet transceiver interface

The SMM167 card is not field-replaceable.

The distance between the IPE Module and the terminals must be 15 m (50 ft) or less due to the restriction of the RS-232 connections. Any distances over 30 m (100 ft) require a limited-distance modem. See Chapter 11, “Peripheral device cabling interface” later in this guide.

### **IPE Module faceplate**

The IPE Module faceplate contains a SCSI connector, four light-emitting diodes (LEDs), and three switches, as illustrated in Figure 12.

The SCSI connector must contain a SCSI terminator.



The LEDs show the following conditions:

- **PWR indicator** This green LED is lit when power is turned on.
- **Run indicator** This yellow LED is lit almost continuously when an application is running, but flickers every few seconds.
- **SCSI indicator** This yellow LED is lit almost continuously when in use. The intensity varies according to the amount of data movement.
- **Fail indicator** This red LED is lit continuously when a hardware failure occurs on the SBC card. It is normal for this indicator to flash while diagnostics are being run (after power-on or during rebooting).

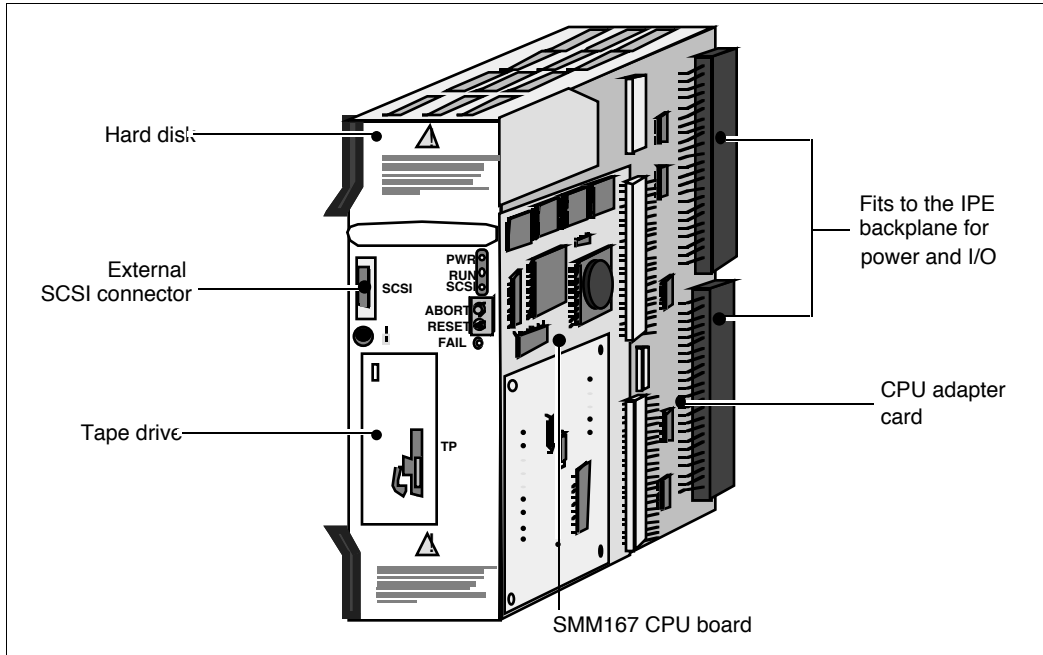
The switches perform the following functions:

- **Power pushbutton** This pushbutton turns power on and off the IPE Module.
- **ABORT button** This button, when pressed, stops program execution and returns control to the debugger. *Do not press this button.* If you accidentally press it, all software operations will stop and you will be in the firmware debugger. In this case, press the red RESET button immediately to reboot the system. Software diagnostics during system boot will attempt to repair possible file system damage caused by the non-standard shutdown.
- **RESET button** This button invokes a cold restart. The system performs a self test and then reboots. *Do not press the button* while an application is running. Exit the application and prepare the system for powering down before pressing the RESET button. If the SBC card is the system controller, this button also generates a VME bus system reset. The software powerdown procedure is provided in Chapter 14, “Software installation, upgrade, and update procedures.”

**CAUTION****Risk of data loss**

Do not press both the ABORT and RESET buttons at the same time—you risk losing device configuration information.

**Figure 12**  
**IPE Module**



**Tape drive (IPE Module)**

The tape drive is a 600-Mbyte cassette tape drive, and cannot be replaced in the field.

The following tapes are supplied with the IPE Module:

- a 155-Mbyte tape that provides the operating system for the IPE Module
- a 155-Mbyte tape that provides the application software
- at least one blank tape for backups

*Note:* As shown in Table 7, the IPE Module cannot write to a 155-Mbyte tape, so you should only use a 600-Mbyte tape for backup. (You cannot see through the sprocket holes of a 600-Mbyte tape.)

**Table 7**  
**Tape usage**

Module	600-Mbyte tape	155-Mbyte tape
IPE Module	Read and write operations (backup and program load)	Read operation only (program load only)
Application Module with 155-Mbyte tape drive (NT7D62)	Not compatible	Read and write operations (backup and program load)

**Disk drive (IPE Module)**

The disk drive is a 240-Mbyte drive, and cannot be replaced in the field.

## Application Module

An Application Module (AM) is a Versa Module Eurocard (VME) platform that is packaged with the Application Equipment Module (AEM) of a Meridian 1. The AEM is a modified Universal Equipment Module (UEM), and can house two separate Application Modules.

The Application Module consists of a VME bus backplane, a single board computer (SBC) card, one or more I/O cards and corresponding transition cards, a hard disk and streamer cassette tape unit, and a power supply. The Application Module chassis measures approximately 35.5 cm (14 in.) high, 32 cm (12-3/4 in.) wide and 32 cm (12-1/2 in.) deep.

An Application Module can co-reside with another Application Module in a single Application Equipment Module.

If your Application Module contains Meridian Link but not CCR, it is referred to as a Meridian Link Module and may have one of the five configurations shown in Table 8. Table 8 shows the upgrade path for each configuration. Notice that the second and fourth configurations are the first and third configurations upgraded to an MVME167 card.

If your Application Module contains CCR but not Meridian Link, it is referred to as a CCR Module and may have one of the five configurations shown in Table 9. Table 9 shows the upgrade path for each configuration. Notice that the second and fourth configurations are the first and third configurations upgraded to an MVME167 card.

Your current module may have other hardware that varies from other modules (for example, I/O panels, tapes, and disk drives), but these are not important for determining upgrade paths.

The Application Module allows PC-based Meridian Link and CCR maintenance consoles, CCR scripting consoles, and LAN-based host computers to be connected to the Application Module through Ethernet.

**Table 8**  
**Hardware upgrade paths for Meridian Link Modules**

<b>Meridian Link Module configuration</b>	<b>Upgrade path to Release 5C</b>	<b>Supports co-residency?</b>	<b>Supports Ethernet LAN?</b>
MVME147 card MVME712AM card No NT6D51AA card Internal modem AC or DC power	None required. Possible upgrade to MVME167 card for increased performance (see below).	No	No
MVME167 card (Upgrade from above) MVME712AM card No NT6D51AA card Internal modem AC or DC power	None required.	No	No
MVME147 card MVME712A card No NT6D51AA card No internal modem DC power	None required. Possible upgrade to MVME167 card for increased performance (see below).	No	No
MVME167 card (Upgrade from above) MVME712A card No NT6D51AA card No internal modem DC power	None required.	No	No
MVME167 card MVME712M card NT6D51AA card No internal modem AC or DC power	None required.	Yes. Requires an MVME332 card.	Yes. Requires NT7D47DA internal cable and NT7D47EA drop cable.

**Table 9**  
**Hardware upgrade paths for CCR Modules**

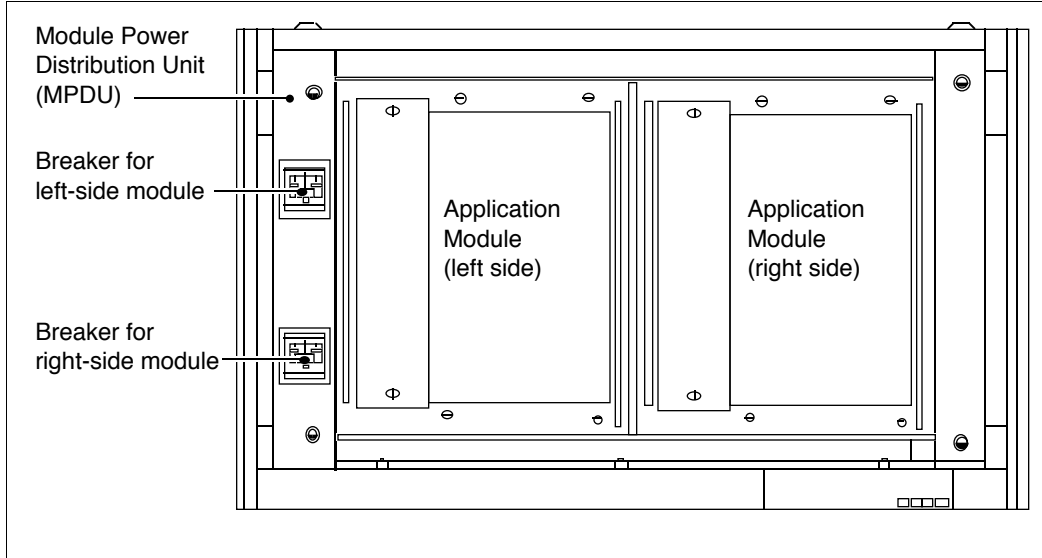
<b>CCR Module configuration</b>	<b>Upgrade path to Release 3C</b>	<b>Supports co-residency?</b>	<b>Supports Ethernet LAN?</b>
MVME147 card MVME712AM card MVME332 card NT6D51AA card Internal modem AC or DC power	None required. Possible upgrade to MVME167 card for increased performance (see below).	Yes. Requires an MVME167 card (see below).	No
MVME167 card (Upgrade from above) MVME712AM card MVME332 card NT6D51AA card Internal modem AC or DC power	None required.	Yes	No
MVME147 card MVME712A card MVME332 card NT6D51AA card No internal modem DC power	None required. Possible upgrade to MVME167 card for increased performance (see below).	Yes. Requires an MVME167 card (see below).	No
MVME167 card (Upgrade from above) MVME712A card No MVME332 card No NT6D51AA card No internal modem DC power	None required.	Yes	No
MVME167 card MVME712M card MVME332 card NT6D51AA card No internal modem AC or DC power	None required.	Yes.	Yes. Requires NT7D47DA internal cable and NT7D47EA drop cable.

## AEM power

The AEM has an NT7D54AA (for AC power) or NT7D54AB (for DC power) module power distribution unit (MPDU) on the left side (as you face the AEM). The top circuit breaker in the MPDU controls power to the left-side Application Module (closest to the MPDU). The bottom breaker controls power to the Application Module on the right side of the AEM. Figure 13 illustrates an AEM viewed from the front.

*Note:* Only the NT7D54AB (DC power) AEM is available in Europe.

**Figure 13**  
**AEM—front view**



*Note:* Either side of the AEM could house the Application Module running Meridian Link and/or CCR. The other Application Module could support another application.



**CAUTION**

**Risk of hardware damage**

If you want to remove a card from an Application Module, you must perform the required software and hardware power-down processes. Hardware can be damaged if a component is reseated on the VME bus while the power is on, and the operating system can be corrupted if the power switch is turned off before the application performs a shutdown.

## Application Module components

The Application Module chassis assembly houses the following basic components (order codes for field-replaceable components are listed in Chapter 20, “Ordering” at the end of this guide):

- an MVME147SA-1 or an MVME167-03 single board computer (SBC) card
- an MVME333-102 X.25 Communication Controller (XCC) card
- an MVME332XTS transition card to support co-residency (present only if CCR is installed)
- an MVME712M, MVME712A or MVME712AM transition card
- an MVME705B transition card
- an NT6D51AA transition card (required only if an MVME332XTS card is present)
- a P2 adapter board
- a slide-in AC or DC power supply
- a slide-in disk-tape unit, which could be any of the following:
  - NT7D62AA: a 104-Mbyte hard disk drive and a 155-Mbyte tape drive
  - NT7D62AB: a 172-Mbyte or a 180-Mbyte hard disk drive and a 155-Mbyte tape drive



- NT7D62AC: a 240-Mbyte hard disk drive and a 155-Mbyte tape drive
- a six-slot VME bus backplane
- a power sense card
- a SCSI bus interface with direct memory access (DMA)
- an input/output (I/O) subpanel, a universal I/O panel, or a generic I/O panel

**CAUTION****Risk of system interruption**

It is recommended that suitable battery backup or uninterruptible power supply (UPS) be installed so that applications running on the Application Equipment Module are not affected by commercial power outages.

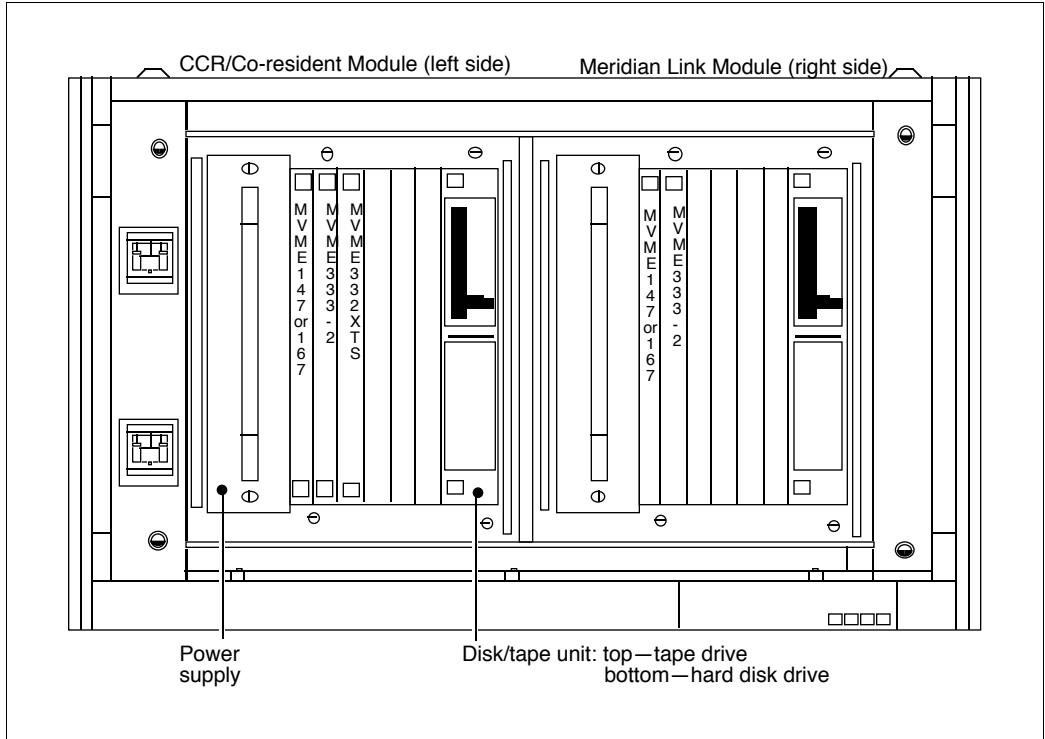
As shown in Figure 14, slots in the front of the Application Module house the power supply, circuit cards, and the disk/tape unit as follows:

- the first card slot houses an MVME147 or MVME167 SBC card
- the second slot houses the MVME333-2 XCC card
- the third slot houses the MVME332XT or MVME332XTS card (for CCR/Co-resident Module)
- the remaining slots are covered by blank faceplates to channel air flow and thus maintain adequate cooling

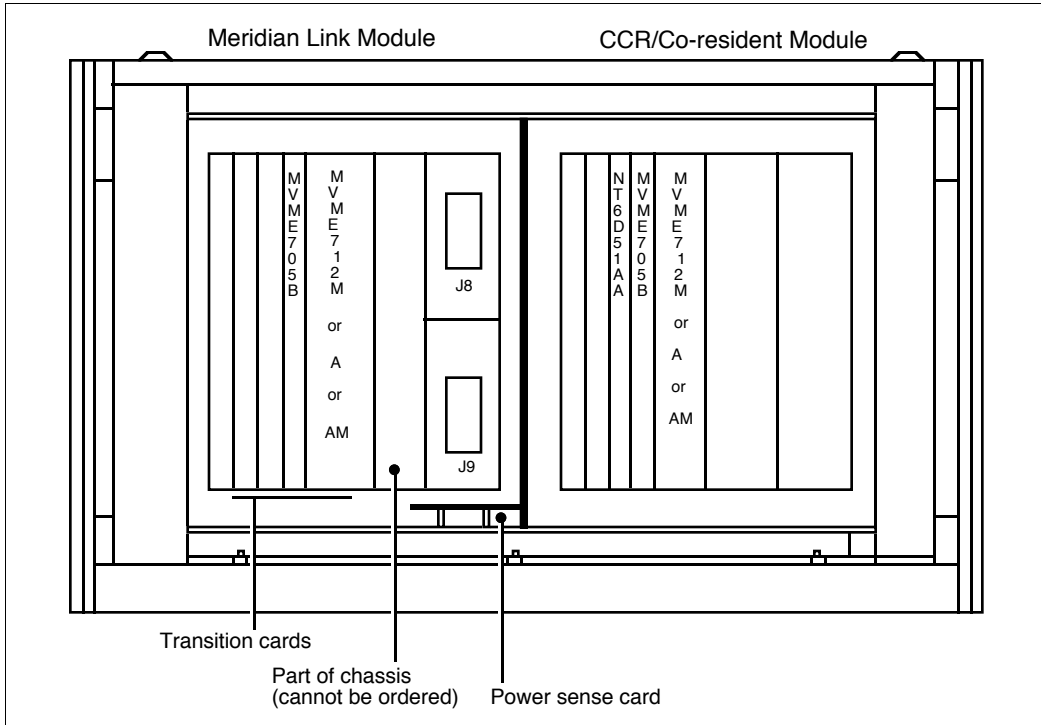
**CAUTION****Risk of hardware damage**

Do not operate the Application Module if the blank faceplates have been removed; overheating may cause equipment damage.

**Figure 14**  
**Application Module—front view**



**Figure 15**  
**Application Module—rear view**



As shown in Figure 15, slots at the rear of the Application Module house the following cards:

- MVME712M (double-width), MVME712A, or MVME712AM transition card
- MVME705B transition card
- NT6D51AA transition card (for CCR/Co-resident Module)

The power sense card and the adapter board are mounted in the rear of the Application Module, either on the I/O subpanel, which is installed in the AEM I/O panel in older installations, or on a central bracket at the bottom of the AEM.

## **Single board computer card (Application Module)**

The first VME card slot (left-hand slot) of the Application Module is occupied by the single board computer (SBC) card. One of two cards may be installed, either the MVME147 or the MVME167 card.

### **MVME147SA-1**

The MVME147 card consists of the following:

- MC68030 microprocessor
- 8 Mbytes of random access memory (RAM)
- MC68882 floating point coprocessor
- shared dynamic random access memory (DRAM) with parity
- time-of-day clock and calendar with battery backup
- 2 kbytes of static random access memory (SRAM)
- four read-only memory (ROM) sockets
- two 16-bit tick timers for periodic interrupts
- watchdog timer

The SBC card provides the following interfaces:

- SCSI bus interface with DMA channel to control the disk/tape unit
- four serial I/O ports with RS-232 interface
- Ethernet transceiver interface

The SBC card also provides the following functions:

- VME bus interrupter
- VME bus system controller functions
- VME bus master interface
- VME bus requester

There are four light-emitting diodes (LEDs) and two switches on the faceplate of the SBC card, as illustrated in Figure 16.

The LEDs show the following conditions:

- **Fail indicator** This red LED is lit continuously when a hardware or software failure occurs on the SBC. It is normal for this indicator to flash while diagnostics are being run (after power-on or during rebooting).
- **Status indicator** This yellow LED is lit when the MC68030 Status signal goes low. When steadily lit, the LED indicates that the processor has stopped. When applications are running, the LED is lit almost continuously but flickers every few seconds.
- **Run indicator** This green LED is lit when the microprocessor executes a bus cycle. When applications are running, the LED is lit almost continuously but flickers every few seconds.
- **SCON indicator** This green LED is always steadily lit to indicate that the SBC card is the VME bus system controller.

The switches perform the following functions:

- **ABORT switch** This switch, when pressed, stops program execution and returns control to the debugger. *Do not press this switch.* If you accidentally press it, all software operations will stop and you will be in the firmware debugger. In this case, press the red RESET switch immediately to reboot the system. Software diagnostics during system boot will attempt to repair possible file system damage caused by the non-standard shutdown.
- **RESET switch** This switch invokes a cold restart. The system performs a self test and then reboots. *Do not press the switch* while applications are running. Exit all applications and prepare the system for powering down before pressing the RESET switch. If the SBC card is the system controller, this switch also generates a VME bus system reset. The software power-down procedure is provided later in this guide.

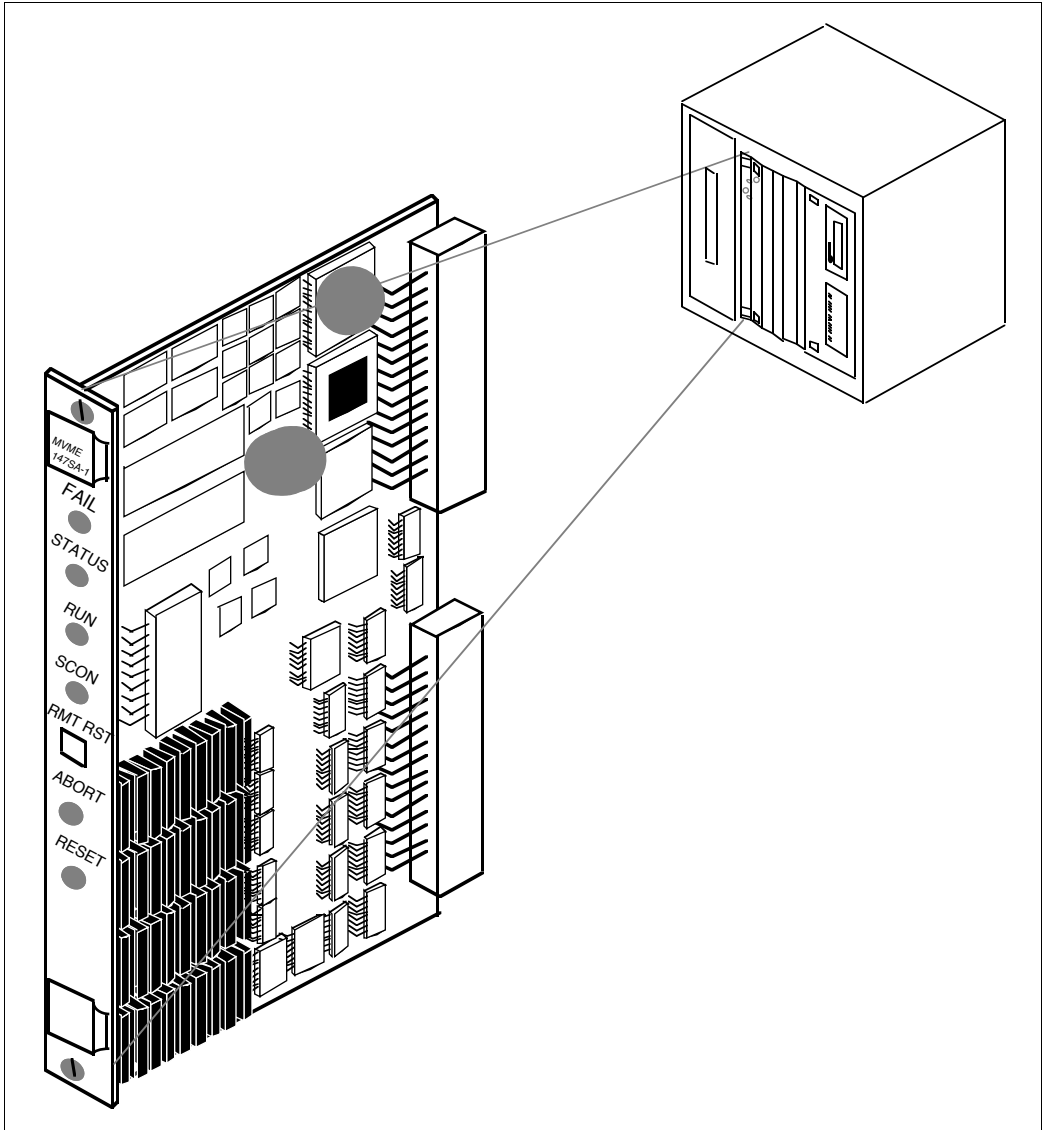


**CAUTION**  
**Risk of data loss**

Do not press both the ABORT and the RESET switches at the same time—you risk losing device configuration information.

The MVME712 transition card makes all serial I/O connections for the SBC card. The SBC card communicates with the transition card through the P2/J2 connector and the P2 adapter board. The SBC card connects to the VME bus through the P1/J1 connector for address and data signals.

**Figure 16**  
**MVME147SA-1 single board computer (SBC) card (Application Module)**



### **MVME167-03**

This card, one of the Motorola MVME167 family, may be installed in place of the MVME147 card in new modules running Meridian Link and/or CCR.

The MVME167 card consists of the following:

- MC68040 microprocessor operating at 25 MHz
- 16 Mbytes of dynamic random access memory (DRAM)
- MC68882 floating point coprocessor
- shared dynamic random access memory (DRAM), with parity
- time-of-day clock and calendar with battery backup
- 128 kbytes of static random access memory (SRAM)

The SBC card provides the following interfaces:

- SCSI bus interface with DMA channel to control the disk/tape unit
- four serial I/O ports with EIA-232-D buffers
- one parallel I/O port with an EIA-232-D buffer
- Ethernet transceiver interface

The SBC card also provides the following functions:

- VME bus interrupter
- VME bus system controller functions
- VME bus master interface
- VME bus requester



There are eight light-emitting diodes (LEDs) and two switches on the faceplate of the SBC card, as illustrated in Figure 17.

The LEDs show the following conditions:

- **Fail indicator** This red LED is continuously lit when a hardware or software failure occurs on the SBC. It is normal for this indicator to flash while diagnostics are being run (after power-on or during rebooting).
- **Status indicator** This yellow LED is lit when the MC68040 Status signal goes low. When steadily lit, the LED indicates that the processor has stopped.
- **Run indicator** This green LED is lit when the microprocessor executes a bus cycle. When applications are running, the LED is lit almost continuously but flickers every few seconds.
- **SCON indicator** This green LED is always steadily lit to indicate that the SBC card is the VME bus system controller.
- **LAN indicator** This green LED is lit when the LAN chip is the local bus master.
- **+12 V indicator** This green LED is lit when power is available to the transceiver interface.
- **SCSI indicator** This green LED is lit when the SCSI chip is the local bus master.
- **VME indicator** This green LED is lit when the board is using the VME bus, or when the board is accessed by the VME bus.

The switches perform the following functions:

- **ABORT switch** This switch, when pressed, stops program execution and returns control to the debugger. *Do not press this switch.* If you accidentally press it, all software operations will stop and you will be in the firmware debugger. In this case, press the red RESET switch immediately to reboot the system. Software diagnostics during system boot will attempt to repair possible file system damage caused by the nonstandard shutdown.

- **RESET switch** This switch invokes a cold restart. The system performs a self-test and then reboots. *Do not press the switch* while applications are running. Exit all applications and prepare the system for powering down before pressing the RESET switch. If the SBC card is the system controller, this switch also generates a VME bus system reset. The software power-down procedure is provided in Chapter 14, “Software installation, upgrade, and update procedures.”

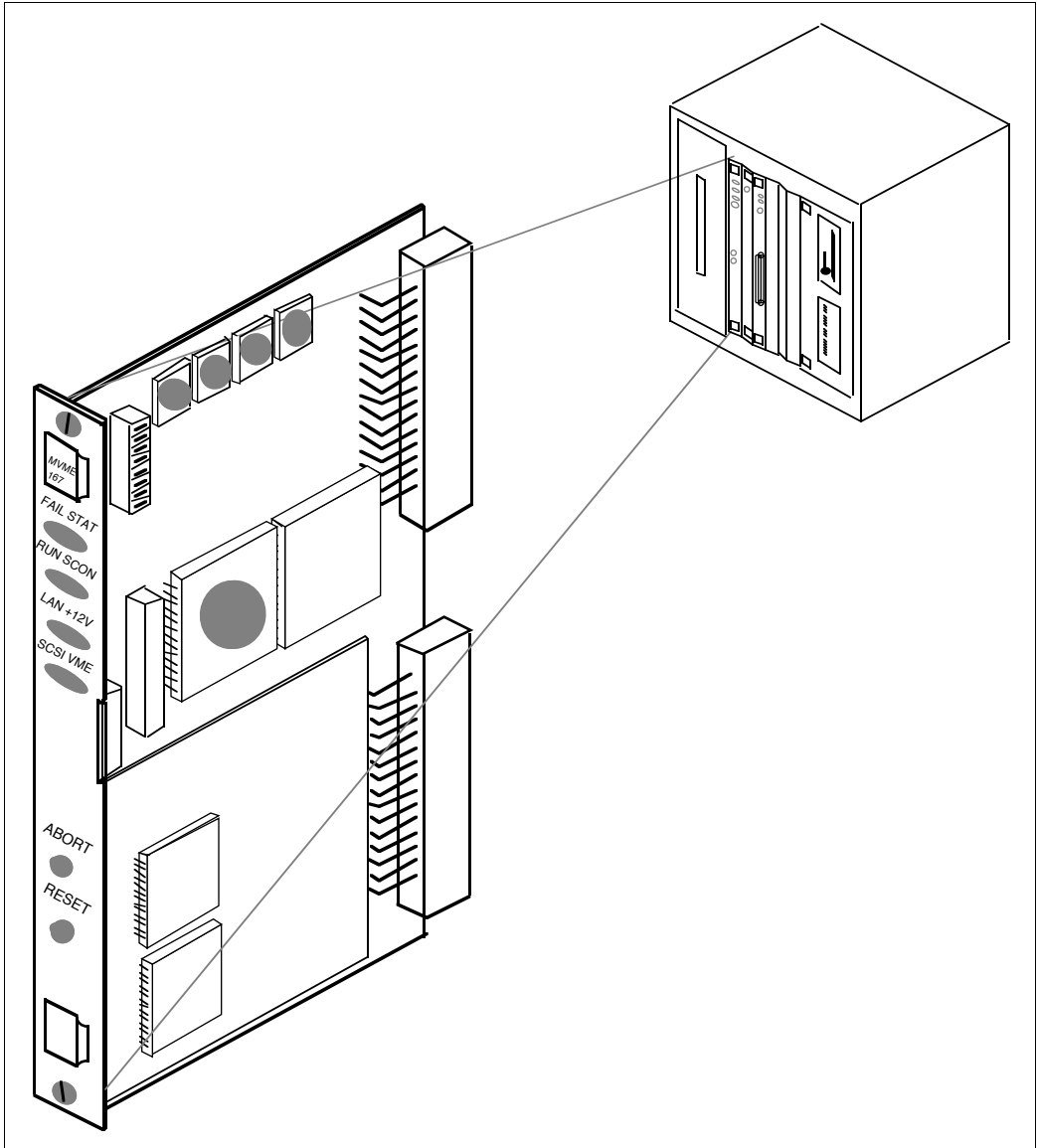


**CAUTION**

**Risk of data loss**

Do not press both the ABORT and the RESET switches at the same time—you risk losing device configuration information.

**Figure 17**  
**MVME167-03 single board computer (SBC) card (Application Module)**



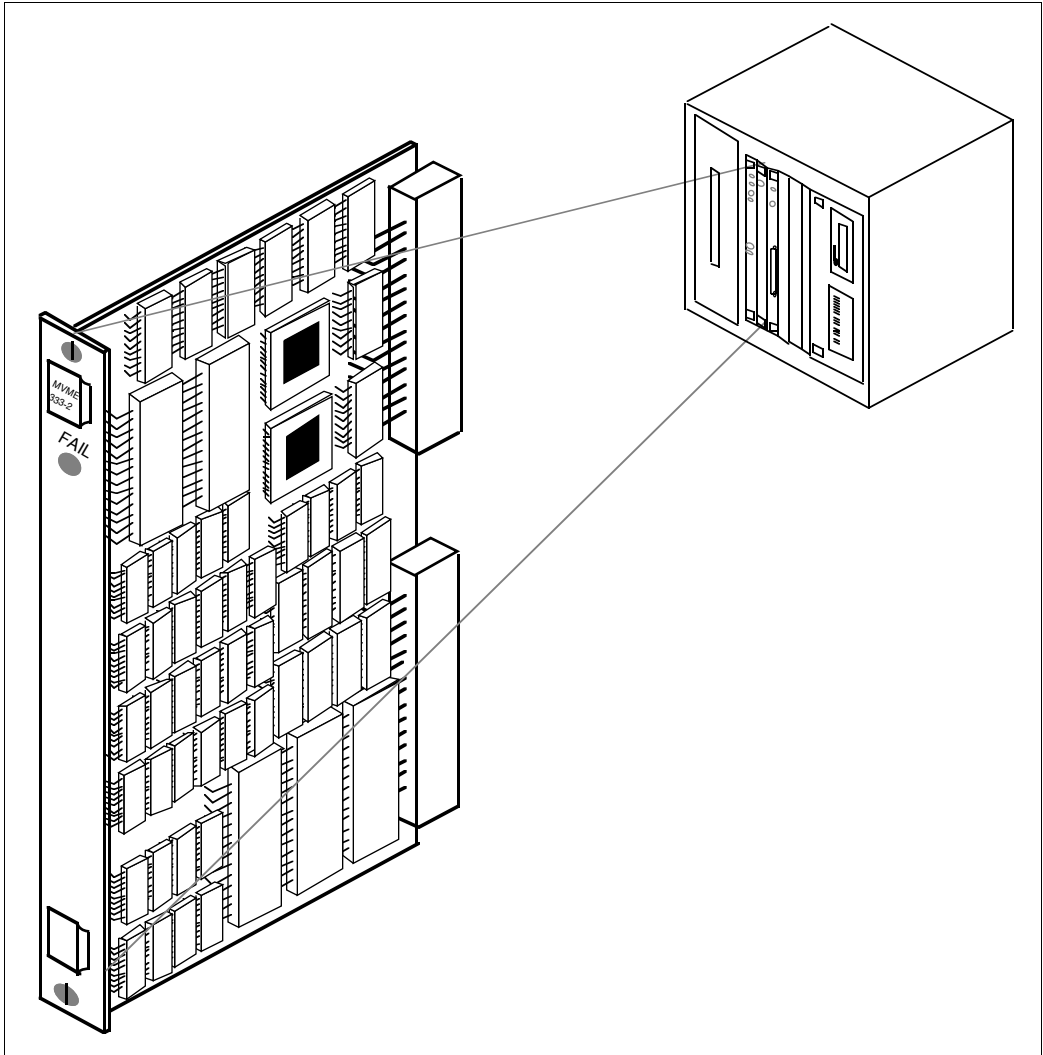
### **MVME333-2 X.25 communication controller (XCC) card**

The MVME333-2 X.25 communication controller (XCC) card occupies the second card slot in the front of the Application Module. This card supports the synchronous data links to the Meridian 1. The XCC card contains the following:

- an MC68010 microprocessor
- an MC68450 DMA controller
- 512 kbytes RAM
- up to 128 kbytes of ROM

There is a single red LED (Fail indicator) on the faceplate, as illustrated in Figure 18. The LED lights when a hardware or LAPB/X.25 communication software error occurs.

**Figure 18**  
**MVME333-2 X.25 communication controller (XCC) card (Application Module)**



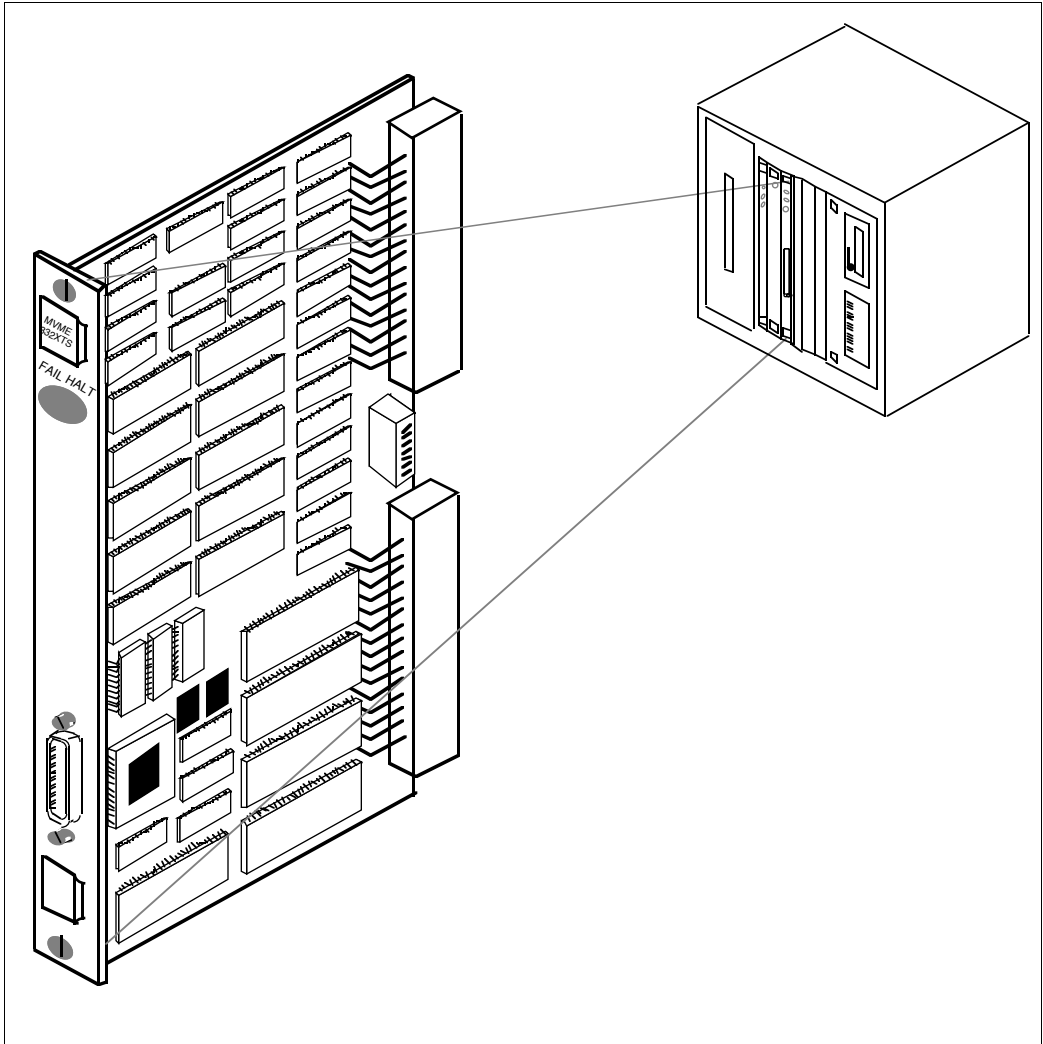
## **MVME332XT or MVME332XTS asynchronous communication controller (ACC) card**

The MVME332XT or MVME332XTS asynchronous communication (ACC) card is used to provide extra terminal/printer ports. The card provides an RS-232 interface between the VME system and the asynchronous serial I/O peripheral devices like the RS-232 modems, printers, and terminals. The ACC card is located in the third card slot in the front of the Application Module.

There are three LEDs on the faceplate of the MVME332XT card and two on the MVME332XTS card (Figure 19). The LEDs show the following conditions:

- ***Fail indicator*** This red LED is lit when a hardware failure occurs on the ACC card.
- ***Halt indicator*** This red LED is lit steadily when the on-board processor halts, indicating an ACC card malfunction.
- ***Run indicator*** The Run indicator LED is found on the MVME332XT card only. This green LED indicates the activity level of the ACC card by lighting dimly, brightly, or in pulsing mode. A dimly lit LED indicates that the system is idle, meaning that no terminal activities are occurring. A brightly lit or pulsing LED indicates data transfer activities such as keyboard input or display updates.

**Figure 19**  
**MVME332XTS asynchronous communication controller (ACC) card**



## **Transition cards**

The MVME system serial I/O uses various transition cards to route signals to standard external connectors such as DB25, DB9, and RJ11 (teledapt).

The transition cards available are the MVME712M, MVME712A, MVME712AM, MVME705B and NT6D51AA. These cards have specific capabilities and hardware configurations. The descriptions and illustrations of these cards follow.

### **MVME712M transition card**

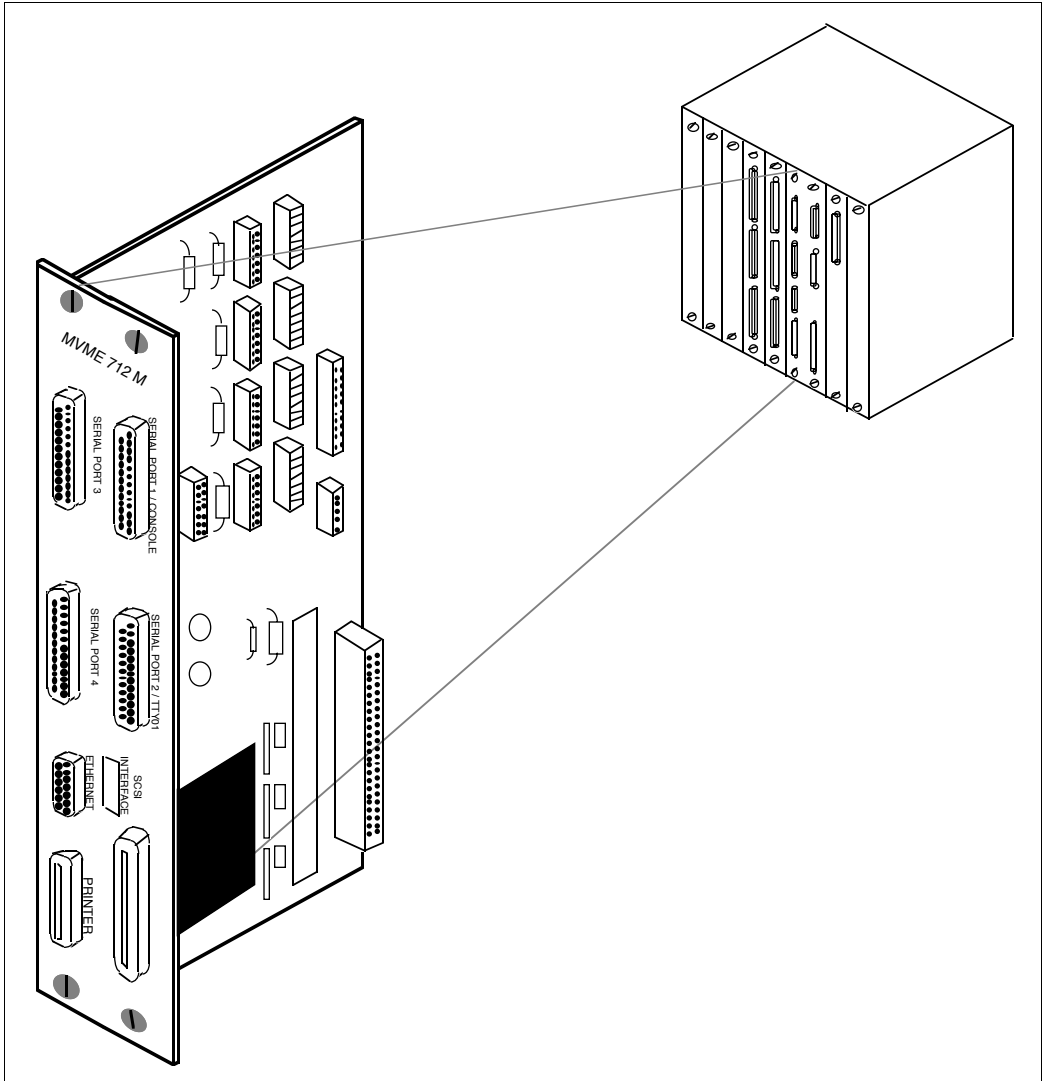
This new transition card (shown in Figure 20) provides an interface between the SBC card and peripheral devices such as the system console. It connects to the J2 connector of the SBC card through the P2 adapter board.

The MVME712M card faceplate provides four 25-pin connectors. Connectors SP1-3 are for asynchronous serial ports 1-3; connector SP4 is for synchronous/asynchronous serial port 4. The MVME712M card does not contain an internal modem.

This transition card also provides an Ethernet connection.



**Figure 20**  
**MVME712M transition card (Application Module)**



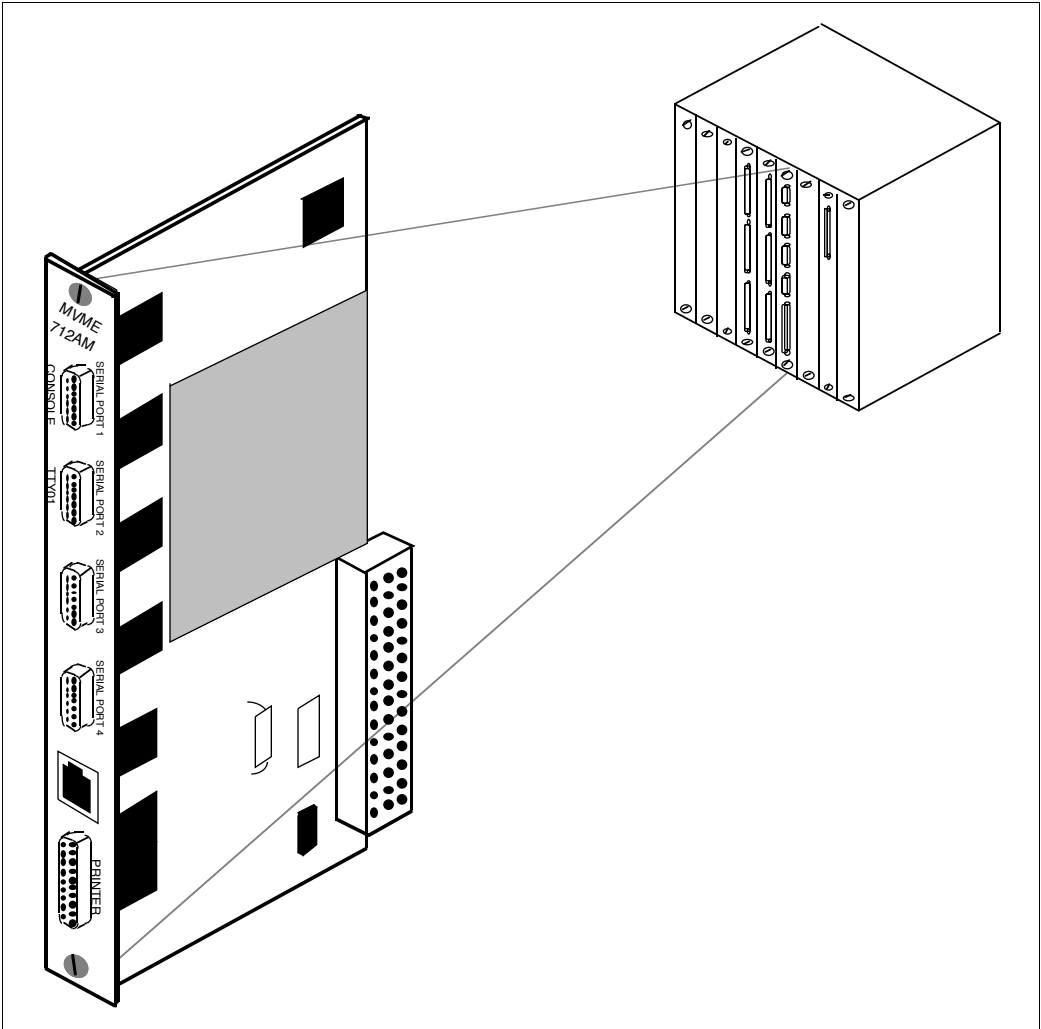
### **MVME712A and MVME712AM transition cards**

The MVME712A and MVME712AM cards provide four 9-pin connectors (asynchronous serial ports 1–4) and a printer port connector. Additionally, the MVME712AM card provides an RJ11 port.

The MVME712AM card (shown in Figure 21) has a built-in modem and is used in countries in which that modem type is approved. The MVME712A transition card, which does not provide a built-in modem, uses a locally approved external modem for remote maintenance.

The built-in modem in the MVME712AM card provides full duplex operation over two-wire Public Switch Telephone Networks (PSTNs). It operates in asynchronous mode at data rates of 300, 600, 1200, or 2400 bps.

**Figure 21**  
**MVME712AM transition card (Application Module)**



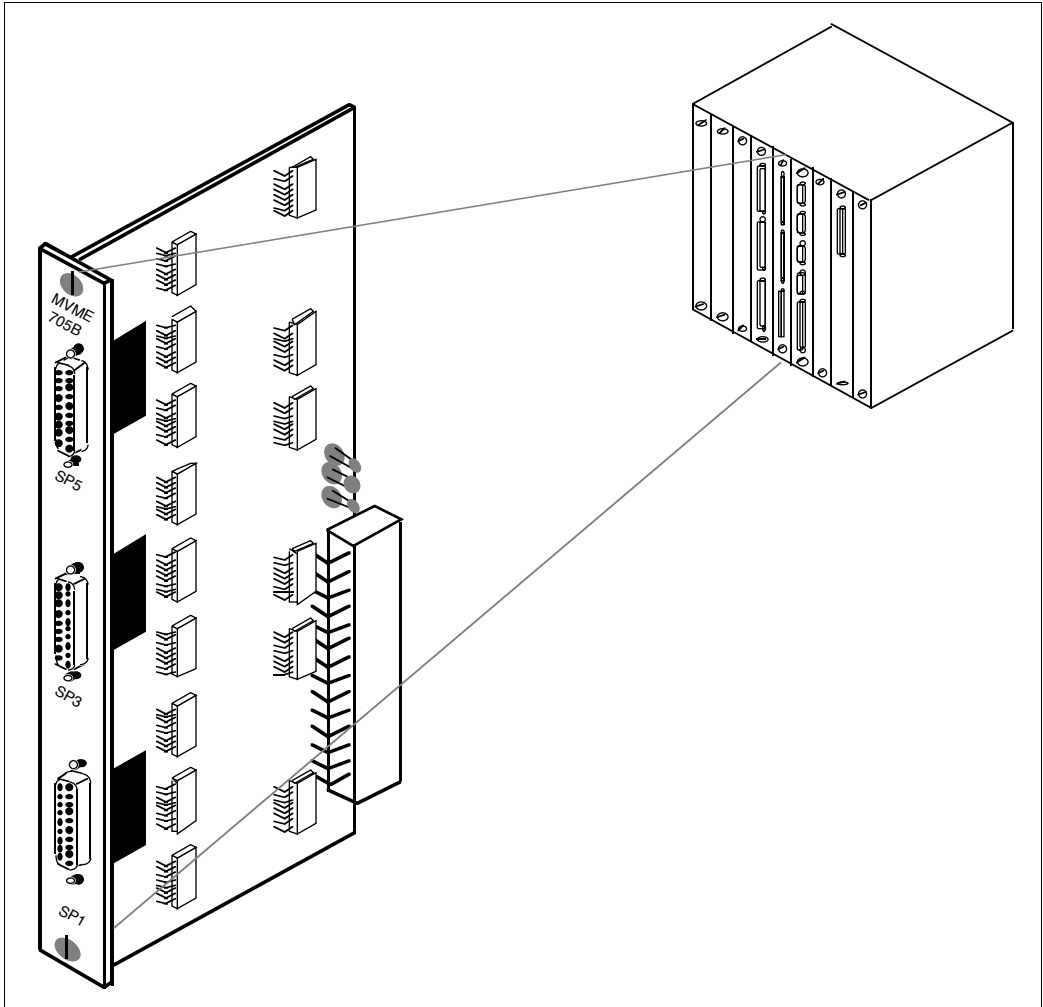
### **MVME705B transition card**

This transition card (shown in Figure 22) provides the transceivers that convert the I/O signals from the XCC card to the RS-232 and/or RS-422 standard for serial data communications. A 64-conductor flat ribbon cable connects the transition card to the XCC card.

The MVME705B transition card provides three serial ports. The ports SP1 and SP3 are synchronous ports. Each of these ports can be configured independently to support DCE or DTE. Port SP5 is the debug port used only by Nortel support personnel; it is not used in the field.

*Note:* The MVME705B transition card that is shipped with the Application Module has port SP1 (ESDI) configured for DTE and port SP3 (host) configured for DCE. When the card is shipped by itself as a replacement card, all ports are configured for DTE (original factory default configuration).

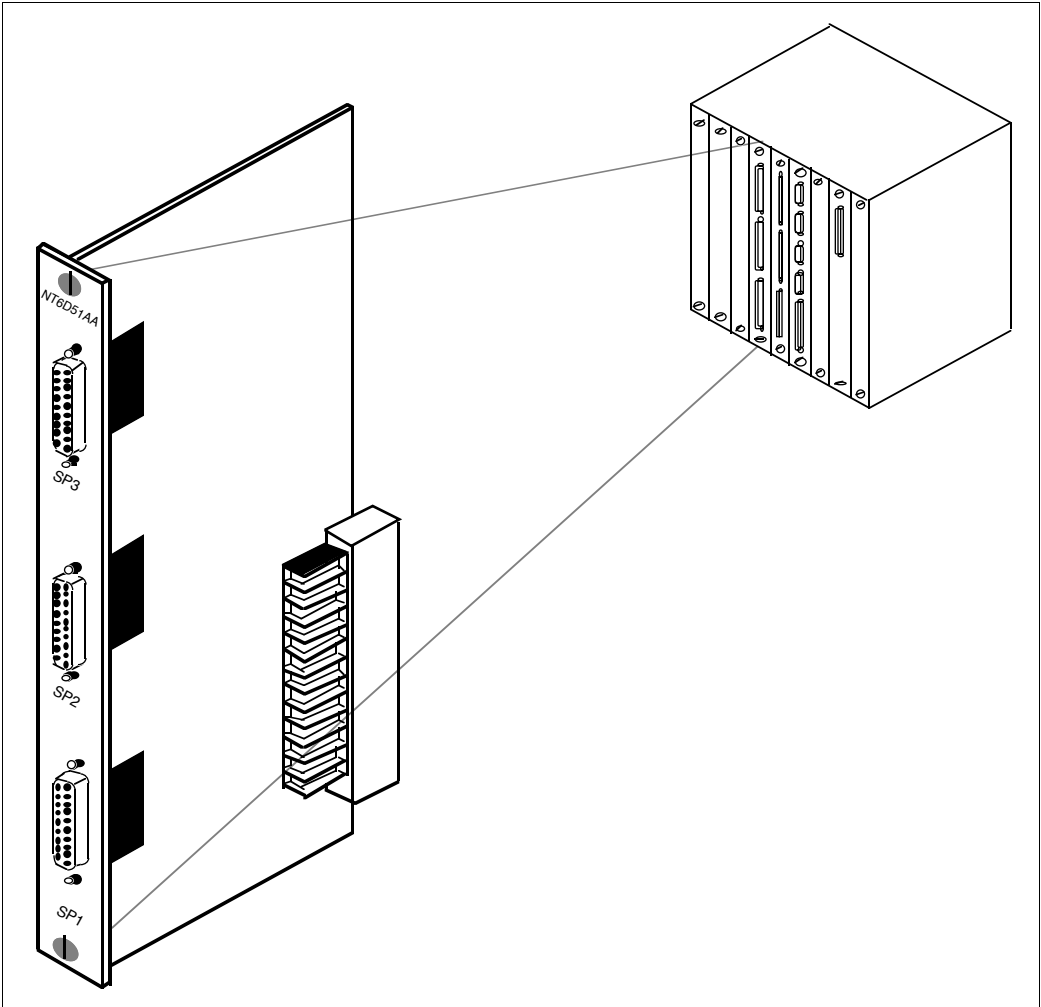
**Figure 22**  
**MVME705B transition card (Application Module)**



### **NT6D51AA transition card**

This custom transition card (shown in Figure 23) provides extra terminal/printer ports for CCR and Co-resident Modules. The card routes signals among the ACC card, the asynchronous user terminals, and the outside world. This card has no optional settings. The NT6D51AA card has a DIN 96-pin connector for a cable that goes to the J2 connector on the VME bus backplane. The card also has three DB25 (SP1, SP2, and SP3) subminiature connectors for cables that go to the I/O panel. Each port requires only eight pins per port, so serial ports 1, 2, and 3 are brought out through SP1. Serial ports 4, 5, and 6 come through SP2, and serial ports 7 and 8 come through SP3. Serial port 9 is not used. Three NT7D95AA cables are required to connect SP1, SP2, and SP3 to the I/O panel.

**Figure 23**  
**NT6D51AA transition card (Application Module)**

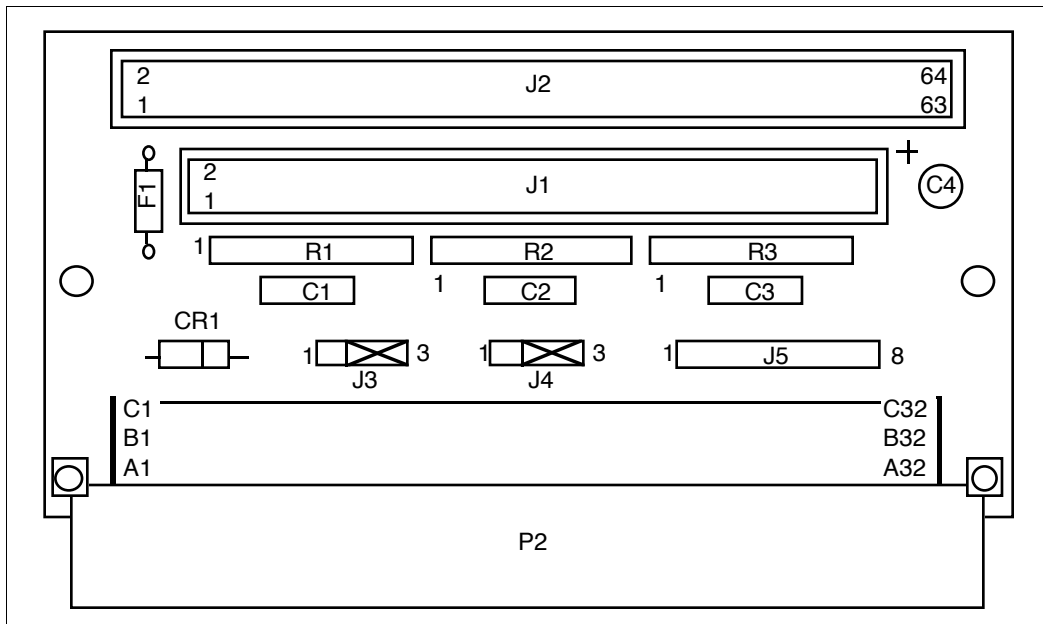


## P2 adapter board

The P2 adapter board (shown in Figure 24) mounts directly behind the SBC card slot, and connects to the SBC card through the J2 connector on the VME bus backplane. The adapter board provides the following:

- a 50-pin connector for SCSI cable connection to the disk/tape unit
- a 64-pin connector, which interfaces I/O port and printer port signals to the MVME712 transition card through a 64-conductor ribbon cable

**Figure 24**  
**P2 adapter board**





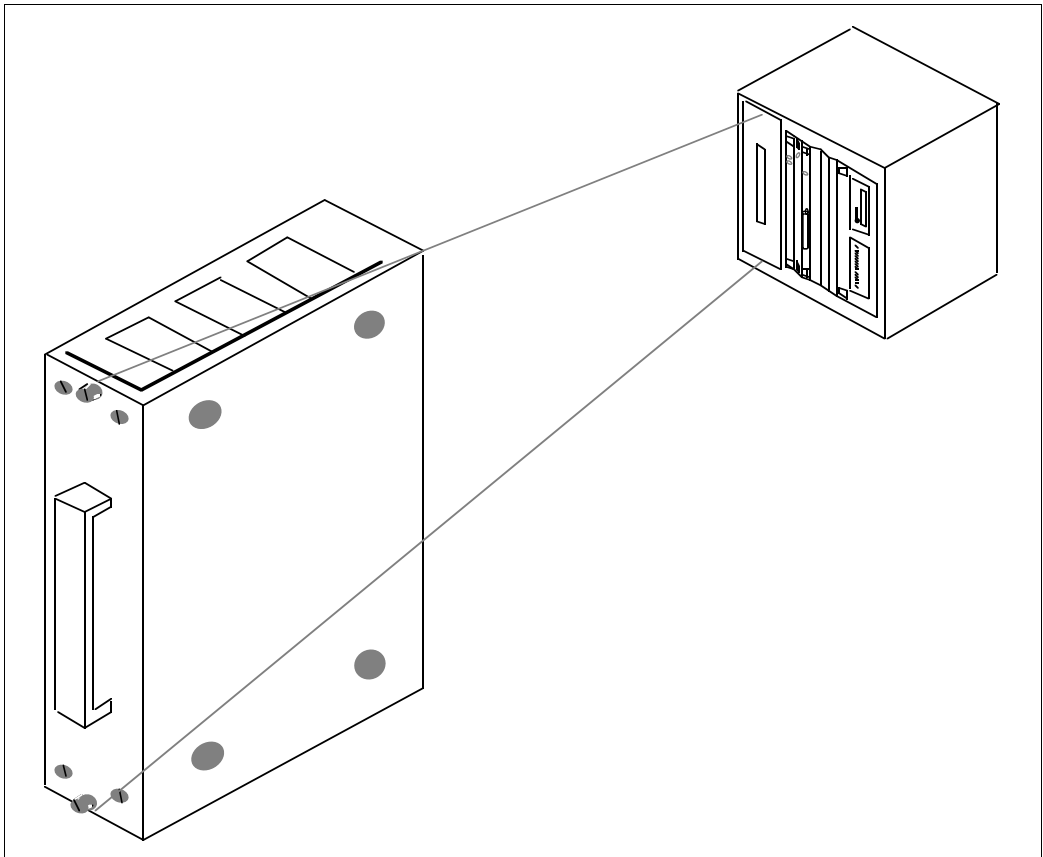
## Power supply

The slide-in power supply (shown in Figure 25) is available in two versions:

- NT7D64AA for AC-powered systems
- NT7D64DC for DC-powered systems

The power supply converts incoming 220 V AC, or -48 V DC, to +5 V and  $\pm 12$  V DC voltages, then distributes these voltages throughout the Application Module.

**Figure 25**  
**Power supply (Application Module)**



## Disk/tape unit

The disk/tape unit (shown in Figure 26) is a slide-in assembly with both a hard disk drive and a cassette tape drive and is used for software installation and backup. A 50-conductor ribbon cable is an integral part of the disk/tape unit, extending the SCSI bus from the SBC card by the P2 adapter board. In the middle of this ribbon cable is an external SCSI connector.

The following disk/tape units are available:

- **NT7D62AA** a 104-Mbyte hard disk drive and a 155-Mbyte tape drive (found in older systems; this unit is no longer available)
- **NT7D62AB** a 172-Mbyte or a 180-Mbyte hard disk drive and a 155-Mbyte tape drive (found in older systems; this unit is no longer available)
- **NT7D62AC** a 240-Mbyte hard disk drive and a 155-Mbyte tape drive

The following tapes are supplied with the Application Module:

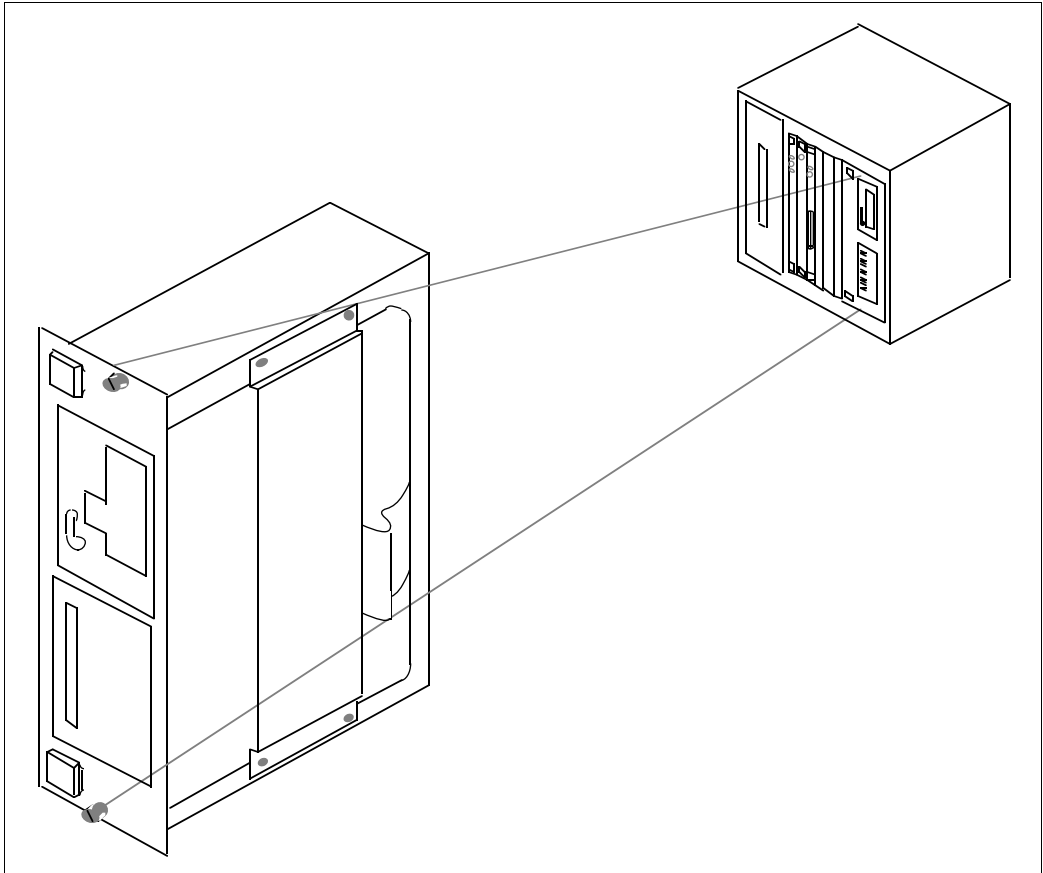
- one that provides the operating system for the Application Module
- one that provides the application software
- at least one blank tape for backups

**Note:** As shown in Table 10, an Application Module with a 155-Mbyte tape drive (NT7D62) cannot use a 600-Mbyte tape. (You cannot see through the sprocket holes of a 600-Mbyte tape.)

**Table 10**  
**Tape usage**

Module	600-Mbyte tape	155-Mbyte tape
IPE Module	Read and write operations (backup and program load)	Read operation only (program load only)
Application Module with 155-Mbyte tape drive (NT7D62)	Not compatible	Read and write operations (backup and program load)

**Figure 26**  
**Disk/tape unit (Application Module)**



### **VME bus backplane (Application Module)**

The six-slot VME bus backplane provides connections (at J1 and J2) for circuit cards installed in the front of the Application Module. The upper connector, J1, provides access to the VME bus for data signals. The J2 connector at the rear of the backplane provides connections for the transition cards. These are not the J1 and J2 connectors on the I/O subpanel.

### **Power sense card (Application Module)**

The power sense card monitors over-voltage and under-voltage conditions for each output of the power supply. The power sense card is cabled to a power monitor on the I/O subpanel or, in newer systems, to a central bracket in the bottom of the AEM. Signals from the power monitor are extended to the system monitor in the pedestal of the column. The system monitor checks the status of all power- and cooling-related components in the column.

Alarm cables must be extended from a stand-alone AEM column to the Meridian 1 as described in “Alarm connections” in the *Application Equipment Module Installation Guide* (NTP 553-3201-200).

### **I/O connectors (Application Module)**

The I/O connectors are 9-pin and 25-pin subminiature D-type connectors. External cables connect to the I/O panel on the AEM. All connectors are shielded from RF and are integral parts of the external cables.

## Input/output panel

Three versions of the I/O panel are currently used with the Application Module. Many existing installations have application-specific I/O subpanels, as shown in Figure 27. Some installations have a universal I/O panel, as shown in Figure 28. All new installations have a generic I/O panel, shown in Figure 29.

The I/O subpanel has nine connectors: J1 through J6 are 25-pin (DB25) connectors; J7 through J9 are 9-pin (DB9) connectors. The removable I/O subpanel is connected to the Application Module by cables from transition cards in the Application Module. All connectors on the I/O subpanel are shielded from RF.

The universal I/O panel has 20 connectors, as shown in Figure 28. The Serial I/O (labeled from 1 through 32), Spare, Host, and ESDI Link ports are 25-pin (DB25) connectors; the Ethernet port is a coaxial cable connector; and the INT MODEM, SDI LINK, EXT MODEM, and SYS CONS ports are 9-pin (DB9) connectors. All connectors on the universal I/O panel are filtered.

The generic I/O panel (Figure 29) is similar to the universal I/O panel but all connectors, except one, are labeled by card and connector. For example, the connectors in the top row are labeled (from left to right) card 5 conn 3 through card 2 conn 3. The exception to this labeling convention is a 15-pin connector labeled Ethernet.

**Figure 27**  
**I/O subpanel (Application Module)**

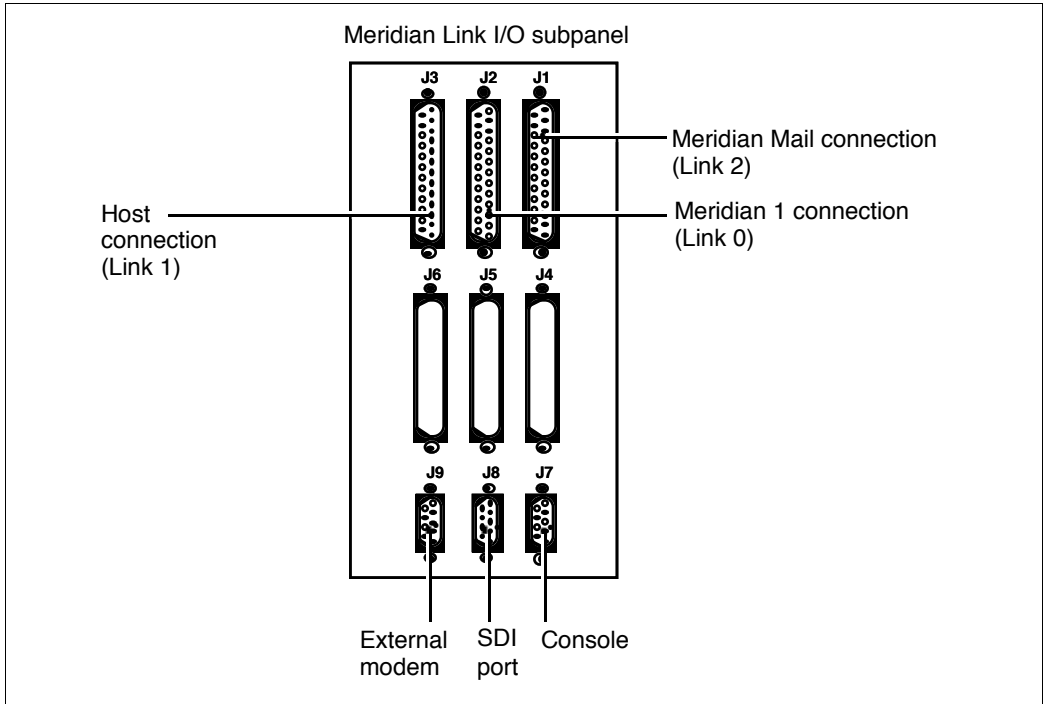
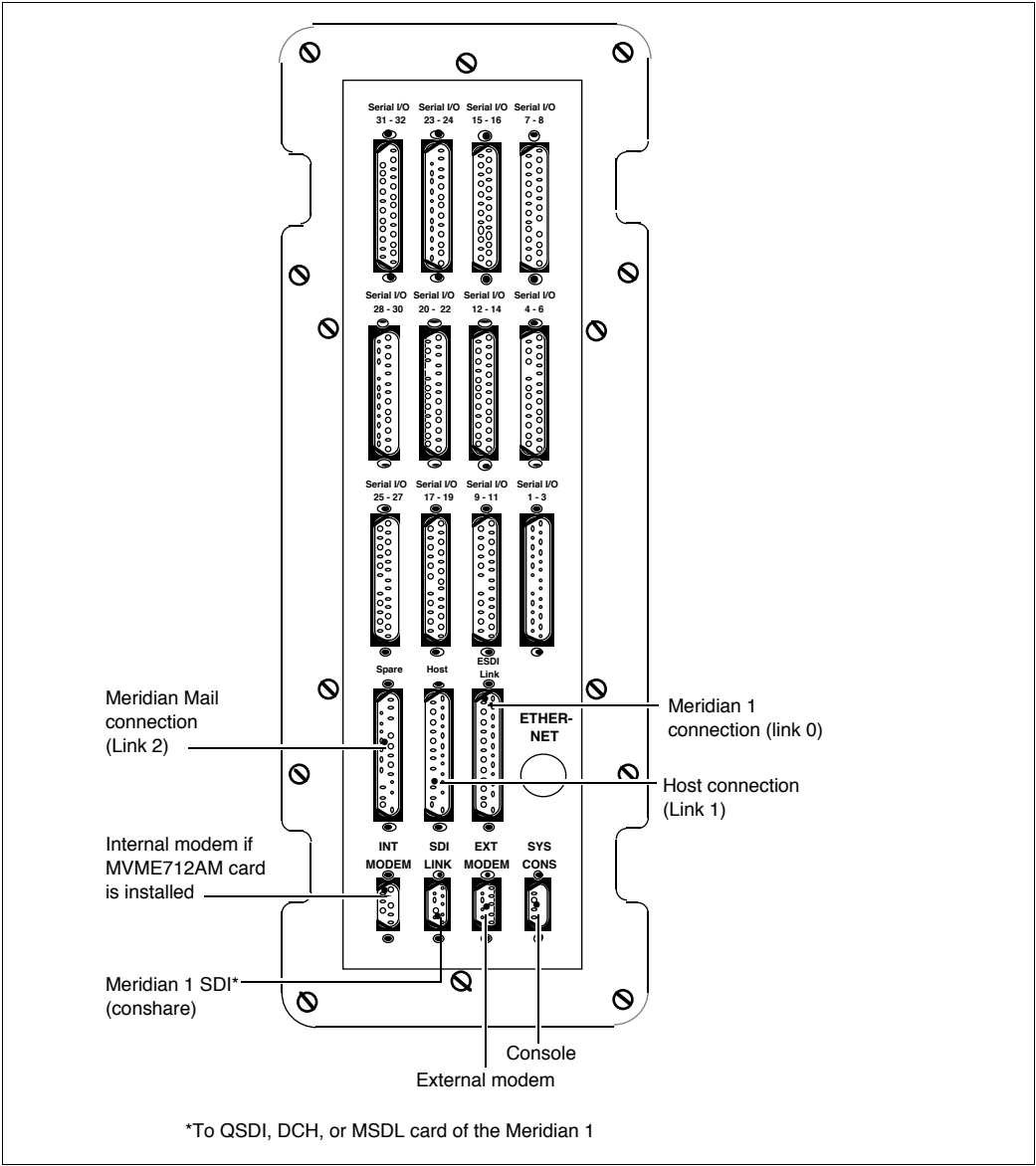
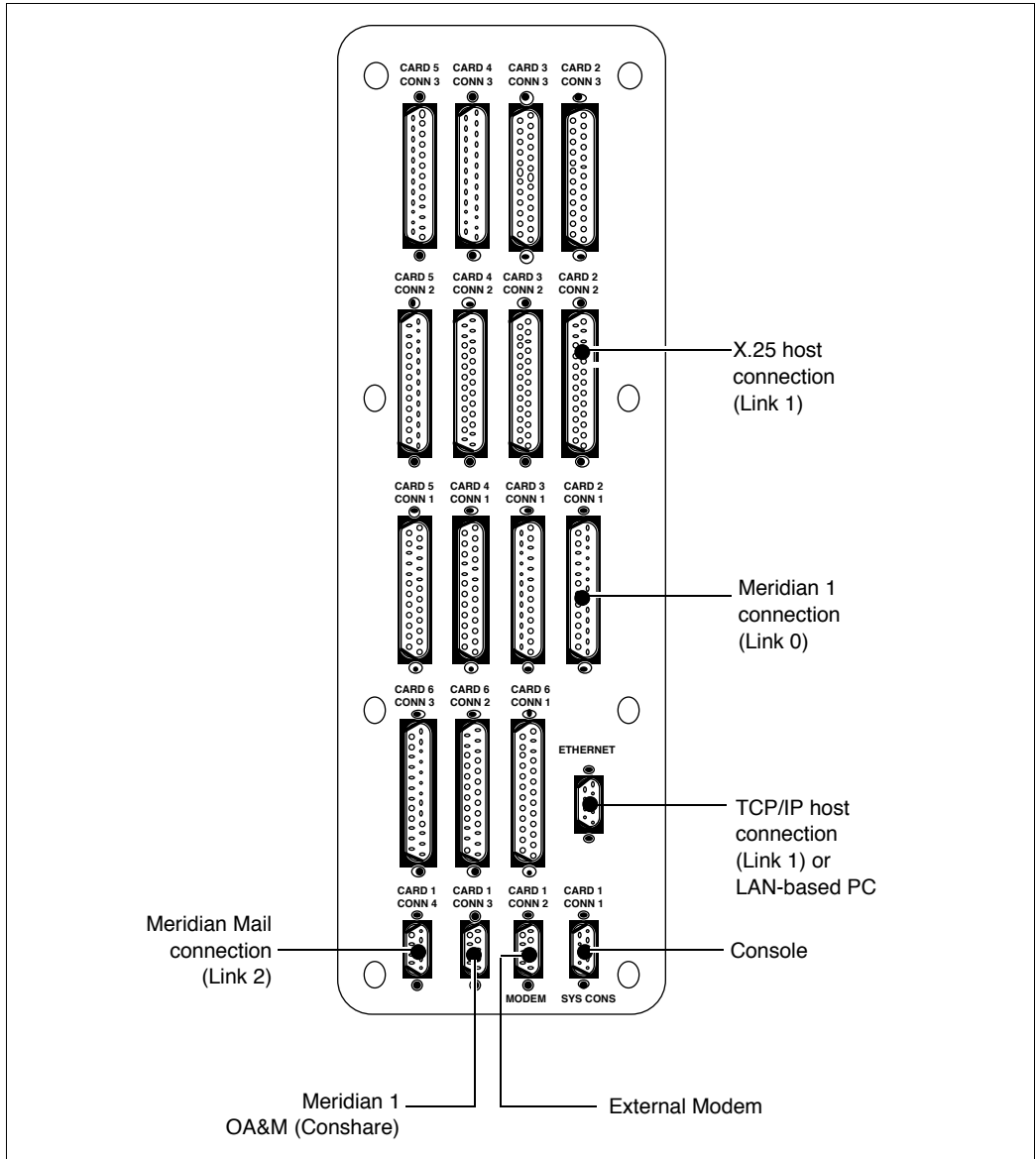


Figure 28  
Universal I/O panel (Application Module)



**Figure 29**  
**Generic I/O panel (Application Module)**





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# Chapter 5: Hardware installation overview

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## Preparing for installation

As soon as the IPE Module or Application Module is delivered, make sure that all deliverable items are present by checking them against the packing slips. Move the equipment to its permanent location before beginning the installation.

Ensure that you have the following tools available:

- antistatic wrist strap
- BIX connector tool (NT product number GYBIX16)
- carpenter's level
- extraction tool (P0741489)
- hammer
- Phillips screwdriver (small, medium)
- slotted screwdriver (small, large)
- socket
- wrenches (1/4, 5/16, and 9/16 in.)
- volt meter
- wire cutters
- wire strippers

## Installing an IPE Module or an Application Module

This section summarizes the steps required to install an IPE Module and an Application Module.

It is important to follow the list of procedures in the order in which they appear below. When you have completed each procedure, return to this list for the next procedure.

**Table 11**  
**Installing an IPE Module**

Procedure	Reference
1. Go through Chapter 6, "Site survey/installation checklist."	Page 91
2. Go through Chapter 7, "Unpack and inspect hardware."	Page 115
3. Install an SDI/DCH, ESDI, or MSDL card (if required). See Chapter 8, "Hardware installation procedures."	Page 142 (SDI/DCH) Page 145 (ESDI or MSDL)
4. Install the IPE Module. See Chapter 8, "Hardware installation procedures."	Page 119
5. Cable to external equipment. See Chapter 9, "Meridian Link/CCR interface cabling."	Page 177 (Option 11) Page 209 (Options 21–81)
6. Install the peripheral devices. See Chapter 10, "Installing peripheral devices."	Page 261
7. Configure the Meridian 1. See Chapter 12, "Meridian 1 configuration for Meridian Link/CCR."	Page 293
8. Configure the links. See Chapter 15, "Link configuration."	Page 479
9. Install the base operating system and the applications. See Chapter 14, "Software installation, upgrade, and update procedures."	Page 371
10. Configure the applications. See Chapter 16, "Additional application configuration."	Page 503

IPE or Application Module software may or may not be pre-loaded:

- If the Module is shipped to the United States, Europe, or Japan, the software is likely to be already loaded.
- If the Module is shipped to a Caribbean or Latin American location, to Canada, or to the Asia Pacific region, the software may *not* be loaded.

**Note:** Once the IPE or Application Module is installed, cabled to external equipment, and powered up, there should be a Console Login: prompt on the system console screen. The absence of the Console Login: prompt indicates that the software is not already loaded.

If the software is not already installed, follow the instructions “To install or reinstall the software from tape” in Chapter 14, “Software installation, upgrade, and update procedures.”

**Table 12**  
**Installing an Application Module**

Procedure	Reference
1. Go through Chapter 6, "Site survey/installation checklist."	Page 91
2. Go through Chapter 7, "Unpack and inspect hardware."	Page 115
3. Install an ESDI or MSDL card (if required). See Chapter 8, "Hardware installation procedures."	Page 142 (SDI/DCH) Page 145 (ESDI or MSDL)
4. Install the AEM (Application Equipment Module), if required.	Refer to the Application Equipment Module Installation Guide (NTP 553-3201-200).
5. Check the transition card option settings (if necessary). See Chapter 8, "Hardware installation procedures."	Page 119
6. Install the Application Module. See Chapter 8, "Hardware installation procedures."	Page 125
7. Cable to external equipment. See Chapter 9, "Meridian Link/CCR interface cabling."	Page 227
8. Install the peripheral devices. See Chapter 10, "Installing peripheral devices."	Page 261
9. Configure the Meridian 1. See Chapter 12, "Meridian 1 configuration for Meridian Link/CCR."	Page 293
10. Configure the links. See Chapter 15, "Link configuration."	Page 479
11. Install the base operating system and the applications. See Chapter 14, "Software installation, upgrade, and update procedures."	Page 371
12. Configure the applications. See Chapter 16, "Additional application configuration."	Page 503

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## Chapter 6: Site survey/installation checklist

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The purpose of this chapter is to provide a checklist to ensure, when installing new hardware and software for Auxiliary Processors, that all hardware, software, documentation, and cable connection requirements are met to successfully complete a new installation. This document helps you find the current status of Auxiliary Processors, and list possible changes to the current status in determining what hardware, software, and documentation needs to be ordered. This checklist should be used as a guide only and does not override any regulatory procedures for ordering new hardware, software, and documentation.

### General information

Provide the following general information for future use by other people.

#### End user

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Country: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Primary contact: \_\_\_\_\_

Secondary contact: \_\_\_\_\_

**Distributor**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Country: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Primary contact: \_\_\_\_\_

Secondary contact: \_\_\_\_\_

**Nortel support representative**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Country: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Primary contact: \_\_\_\_\_

Secondary contact: \_\_\_\_\_

## Delivery information

Provide data for authorized personnel to ensure proper delivery of new hardware, software, and documentation.

### Customer site

Address: \_\_\_\_\_

\_\_\_\_\_

Country: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Primary contact: \_\_\_\_\_

Secondary contact: \_\_\_\_\_

Vehicle restrictions: \_\_\_\_\_

Permit(s) required: \_\_\_\_\_

Hours of delivery: \_\_\_\_\_

Security clearance: \_\_\_\_\_

### Freight company

Pre-delivery notification: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Primary contact: \_\_\_\_\_

Secondary contact: \_\_\_\_\_

Hours to delivery: \_\_\_\_\_

Unloading/Unpacking: \_\_\_\_\_

### **Loading equipment required**

Responsible party: \_\_\_\_\_

Delivery constraints: \_\_\_\_\_

Elevator capacity: \_\_\_\_\_

Equipment delivery route to the equipment room: \_\_\_\_\_

\_\_\_\_\_

### **Meridian 1 software checklists**

To check the Meridian 1 software, use the Meridian 1 Overlay program 22 (LD 22) and obtain a printout of:

- the current software issue (ISS) and package list (PKG) as outlined in the *Generic X11 Input/output Guide* (NTP 553-001-400). Compare the printout with the following requirements and checklists.
- the ADAN information which will be required when setting physical card address switches on the ESDI (QPC513G) or MSDL card.
- the tape ID (TID) which will be required when installing the Meridian Link/CCR application. Use this information when prompted to enter your Meridian 1 ID.



## Requirements for Meridian Link

Chapter 2, “Overview of Meridian Link” describes the Meridian 1 software requirements in general. To take advantage of the latest Meridian Link Release 5 features, X11 Release 22 must be installed. Full support for Release 5 features in international markets requires global X11 Release 22. Release 5C features require X11 Release 24. All Option 11 systems also require X11 Release 22.

Meridian 1 software conversion/upgrade required: Yes ( ) No ( )

If required, from Release: \_\_\_\_\_ to Release: \_\_\_\_\_

**Table 13**

**Meridian Link—Meridian 1 software package requirements**

<b>Meridian 1 software package</b>	<b>Yes</b>	<b>No</b>
IMS 35 (Integrated Message System)		
CSL 77 (Command Status Link)		
IAP3P 153 (ISDN/AP for Third Parties)		
MLM 209 (Meridian Link Module)		

**Table 14**  
**Meridian Link—Optional Meridian 1 software packages**

<b>Meridian 1 software package</b>	<b>Yes</b>	<b>No</b>
BACD 40 (Basic Automatic Call Distribution)		
DNIS 98 (Dialled Number Identification Service)		
ACDB 41 (ACD Package B)		
ACD 42 (ACD Usage Reports)		
ACD 43 (ACD Load Management)		
ACDA 45 (ACD Package A)		
ACDD 50 (ACD MAX applications)		
EAR 214 (Enhanced ACD Routing)		
CCR 215 (Customer Controlled Routing)		
ISDN 145 (Integrated Services Digital Network)		
PRA 146 (Primary Rate Access)		
ISL 147 (ISDN Signalling Link)		
STA 228 (Single Terminal Access)		
MSDL 222 (Multi-Purpose Serial Data Link)		
MSDL SDI 227 (MSDL Serial Data Interface)		
Call ID 247 (Call ID)		

Contact your Nortel support personnel if there are any discrepancies.

## Requirements for CCR

Chapter 3, “Overview of Customer Controlled Routing” describes the Meridian 1 software requirements in general. To use CCR Release 3 features, X11 Release 19 must be installed. Full support for Release 3 features in international markets requires global X11 Release 20. With CCR Release 3C, the DNIS digits supported have been expanded from seven digits to a maximum of 31 digits. Note that X11 Release 24 is required to support the expanded DNIS feature. All Option 11 systems require X11 Release 20.

Meridian 1 software conversion/upgrade required: Yes ( ) No ( )

If required, from Release: \_\_\_\_\_ to Release: \_\_\_\_\_

CCR requires the Meridian 1 to have the following additional packages.

**Table 15**  
**CCR—Meridian 1 software package requirements**

Meridian 1 software package	Yes	No
Basic Automatic Call Distribution (BACD 40)		
ACD Package B (ACDB 41)		
ACD Package A (ACDA 45)		
Command Status Link (CSL 77)		
Enhanced ACD Routing (EAR 214)		
Customer Controlled Routing (CCR 215)		
Hold In Queue for IVR (IVR 218)		
Call ID 247		
Single Terminal Access (STA 228)		
Multi-Purpose Serial Data Link (MSDL 222)		
MSDL Serial Data Interface (MSDL SDI 227)		

Contact your Nortel support personnel if there are any discrepancies.

## Requirements for Meridian Mail to support Meridian Link

The following information is for a Meridian Mail system working with Meridian Link. The requirements for a stand-alone Meridian Mail system may be different.

- Meridian 1 Generic X11 Release 17 or later
- Meridian 1 Generic X11 Release 19 or later (required for Integrated Mailbox Administration and Single Terminal Access)

Meridian 1 software conversion/upgrade required: Yes ( ) No ( )

If required, from Release: \_\_\_\_\_ to Release: \_\_\_\_\_

To support Meridian Link, Meridian Mail also requires the Meridian 1 system to have the following additional packages.

**Table 16**  
**Meridian Mail—Meridian 1 software package requirements**

Meridian 1 software package	Yes	No
Make Set Busy (MSB 17)		
End-to-End Signalling (EES 10 )		
Message Center (MWC 46)		
Network Message Services (NMS 175)		
Advanced Network Services (NTWK 148)		
Single Terminal Access (STA 228)		
Multi-Purpose Serial Data Link (MSDL 222)		
MSDL Serial Data Interface (MSDL/SDI 227) (STA only)		
Call Party Name Display (CPND 95)		
Console Presentation Group (CPGS 172)		
Multi-Tenant Service (TENS 86)		

Contact your Nortel support personnel if there are any discrepancies.

## Meridian Mail hardware checklist to support Meridian Link

Use the following checklists to check the Meridian Mail hardware.

Refer to *Meridian Mail System Administration* (NTP 555-70XX-301) and *System Administration Tools* (NTP 555-7001-305) on how to obtain information about Meridian Mail current status.

Meridian Mail serial number: \_\_\_\_\_

Current Meridian Mail software release: \_\_\_\_\_

Current number of Meridian Mail channels: \_\_\_\_\_

Basic service ports: \_\_\_\_\_

Full service ports: \_\_\_\_\_

Multimedia ports: \_\_\_\_\_

Current hours of storage: \_\_\_\_\_

Number of Meridian Mail channels required: \_\_\_\_\_

Basic service ports: \_\_\_\_\_

Full service ports: \_\_\_\_\_

Multimedia ports: \_\_\_\_\_

Hours of voice storage required: \_\_\_\_\_

Meridian Mail Access and an RSM port are required on the Meridian Mail system to implement voice enhanced processing.

## IPE Module and Application Module: Meridian Link/CCR software

Use the following checklists to check the software and documentation.

### IPE Module and Application Module: Meridian Link/CCR software current status

Use the showid and version commands to obtain the following information:

- Meridian Link serial number: \_\_\_\_\_
- Current IPE Module and Application Module software release:  
\_\_\_\_\_
- Current IPE Module and Application Module software options:  
\_\_\_\_\_

### Changes to IPE Module and Application Module

Compare the ordering documents to the shipping documents to ensure complete shipment of software. Some software options require specific hardware; refer to Chapter 4, “Meridian Link/CCR hardware” to make certain that the proper hardware was ordered and delivered with the software.

IPE Module and Application Module software conversion/upgrade required: Yes ( ) No ( )

If required, from Release: \_\_\_\_\_ to Release: \_\_\_\_\_

Will Ethernet be enabled? Yes ( ) No ( )

**Table 17**  
**IPE Module and Application Module software options**

IPE Module and Application Module software	Yes	No
Service 1: OA&M		
Service 95: Obsolete		
Service 96: Obsolete		
Service 97: Inbound Call Management		
Service 98: Outbound Call Management		
Service 99: Enhanced Call Processing		
Service 100: Host Enhanced Routing		
Service 101: Host Enhanced Voice Processing		

*Note:* The software options are listed in the packing slip.

### Meridian Link/CCR tapes and keycode

Verify that the proper tapes have been received and are on site.

**Table 18**  
**Meridian Link and CCR tapes**

Tape	Yes	No
Meridian Link/CCR Co-Residency R5.21 Operating System Tape		
Meridian Link/CCR Co-Residency 5.21 Application Tape		
Backup Tape(s)		

A keycode is enclosed with the software tapes, enabling activation of the correct application(s). The keycode also defines the features and hardware configuration purchased by the customer.



## Documentation

Verify that proper documentation was shipped. Information about Meridian Link Release 4 operation and configuration can be found in the following guides:

- *Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide* (NTP 553-3211-510)
- *Application Module and Intelligent Peripheral Equipment Module Advanced Maintenance Guide* (NTP 553-3211-512)
- *Customer Controlled Routing User Guide* (P0747008)
- *Meridian Link/Customer Controlled Routing Engineering Guide* (NTP 553-3211-520)

Information about the Access option of the Meridian Mail that provides the voice service interface for the Application Module can be found in the following:

- *Meridian ACCESS Configuration Guide* (NTP 555-7001-315)
- *Meridian ACCESS Developer's Guide* (NTP 555-7001-316)
- *Meridian ACCESS Application Programming Interface* (NTP 553-7001-317)
- *Meridian ACCESS Voice Prompt Editor Users Guide* (NTP 553-7001-318)

The NTPs referenced above are continually revised to reflect product improvements and documentation enhancements.

List of documentation available:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Hardware

Use the following checklists to check the hardware.

**Table 19**  
**Equipment cabinets**

Equipment cabinet	Quantity	Type

**Table 20**  
**Meridian 1 CPU compatibility**

Upgrade required	Yes	No
CPU ROM		
Memory		

**Table 21**  
**Input/Output devices**

Input/Output device	Yes	No
Space available for ESDI/MSDL card		
Space available for additional ENET card		
AML requirements needed		
Number of AML ports required:		
NMS requirements needed		
ISDN/PRI hardware		

**Table 22**  
**Hard disk and tape drive type**

<b>Equipment</b>	<b>Manufacturer and Part Number/Size</b>
Hard disk	
Tape drive	

## **Equipment room information**

To ensure that you avoid problems caused by locating equipment in the wrong place, you should obtain a floor plan that has been updated to show your new equipment.

Existing floor plan: Yes (  ) No (  )

## Power and ground considerations

Your module's power source is either 110 V AC or 208 V DC. In each case, refer to the following NTPs to ensure that proper power and grounding requirements are met.

- *Application Equipment Module Installation Guide* (NTP 553-3201-200)
- *MPP600 Modular Power Plant: Description, installation, operation, and maintenance manual* (NTP 167-9021-105)
- *Meridian 1 Applications System 600/48 Description, Installation, Operation and Maintenance Manual* (NTP 167-9021-111)

Use the following checklist to check the condition of the power source at your site.

**Table 23**

**Power and ground considerations for AC-powered modules**

<b>Power and ground considerations</b>	<b>Yes</b>	<b>No</b>
Is there a separately grounded 110 V AC outlet for power equipment?		
Is an approved ground system in place?		
Has the approved power and ground been measured?		
Does the approved power and ground system meet the requirements outlined in Power Engineering (NTP 553-3001-151)?		

## Equipment cabling

The following tables provide checklists and references for checking the cabling.

### Input/output device cabling

Measure the cable distance for the input/output devices listed in Table 24. For information on the proper cables and connections, refer to the appropriate NTP.

**Table 24**  
**Input/Output devices cable distance**

Input/Output devices	NTP
IPE Module or Application Module to Meridian 1 (Link cable)	This guide
IPE Module or Application Module to Meridian Mail (Link cable)	This guide
PBX to Meridian Mail (Link cable)	Options Installation Guide (NTP 555-7011-210)  Options Maintenance Guide (NTP 555-7011-500)  Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250)  Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250)  Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250)  Card Option Installation and Maintenance Guide (NTP 555-7071-210)

## Peripheral device cabling

Measure the cable distance for the peripheral devices listed in Table 25. For information on the proper cables and connections, refer to the appropriate NTP.

**Table 25**  
**Peripheral devices cable distance**

Peripheral devices	NTP
Meridian Mail to A/B switchbox	Options Installation Guide (NTP 555-7011-210)  Options Maintenance Guide (NTP 555-7011-500)  Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250)  Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250)  Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250)  Card Option Installation and Maintenance Guide (NTP 555-7071-210)
— continued —	

**Table 25**  
**Peripheral devices cable distance (continued)**

Peripheral devices	NTP
A/B switchbox to administration terminal	Options Installation Guide (NTP 555-7011-210)  Options Maintenance Guide (NTP 555-7011-500)  Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250)  Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250)  Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250)  Card Option Installation and Maintenance Guide (NTP 555-7071-210)
Application Module to administration terminal	This guide
A/B switchbox to modem	Options Installation Guide (NTP 555-7011-210)  Options Maintenance Guide (NTP 555-7011-500)  Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250)  Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250)
— continued —	

**Table 25**  
**Peripheral devices cable distance (continued)**

Peripheral devices	NTP
A/B switchbox to modem (continued)	Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250)  Card Option Installation and Maintenance Guide (NTP 555-7071-210)
Printer to administration terminal	This guide  Options Installation Guide (NTP 555-7011-210)  Options Maintenance Guide (NTP 555-7011-500)  Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250)  Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250)  Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250)  Card Option Installation and Maintenance Guide (NTP 555-7071-210)
Ethernet connection	This guide
— end —	



## Telephony connections

Measure the cable distance for the devices listed in Table 26. For information on the proper cables and connections, refer to the appropriate NTP.

**Table 26**  
**Telephony connections cable distance**

Telephony devices	NTP
Modem to phone jack	This guide
PBX to Meridian Mail (network loop)	Options Installation Guide (NTP 555-7011-210) Options Maintenance Guide (NTP 555-7011-500) Meridian Mail Modular Option Installation and Maintenance Guide (NTP 555-7041-250) Meridian Mail Modular Option GP Installation and Maintenance Guide (NTP 555-7051-250) Meridian Mail Modular Option EC Installation and Maintenance Guide (NTP 555-7061-250) Card Option Installation and Maintenance Guide (NTP 555-7071-210)

## Equipment room cooling conditions

Use this list to note the conditions in the equipment room.

- Type: \_\_\_\_\_
- Ambient temperature: \_\_\_\_\_
- Humidifier/air conditioner: \_\_\_\_\_
- Customer restrictions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- Notes on current environmental conditions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Additional considerations

Use the following checklist to check for additional considerations.

**Table 27**  
**Additional considerations**

Additional considerations	Yes	No
Does the existing PBX installation conform to NTP and Product Bulletins?		
Does the end user have any complaints with existing PBX?		
Does the end user have any complaints with existing Meridian Mail system?		
Does the end user have any complaints with existing Auxiliary system?		





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## Chapter 7: Unpack and inspect hardware

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You should use this chapter in conjunction with Chapter 5, “Hardware installation overview,” which links hardware installation procedures in easily understood tables (Tables 11 and 12).

This chapter provides information on receiving, unpacking, and inspecting the IPE Module and Application Module hardware components.

When handling the equipment during receiving, unpacking, and inspection, use the following precautions:

- Do not drop circuit packs.
- Do not remove circuit packs from their shipping container until they are ready to be inserted.
- Handle circuit packs by their edges or faceplate.
- Do not touch the components on the printed circuit board.
- Set static-sensitive circuit packs down only on the antistatic bag supplied in the shipping container.
- Do not stack circuit packs on top of each other.
- Do not insert or remove circuit packs unnecessarily.
- Do not attempt field repairs of circuit packs.
- Store circuit packs in a spare shelf or side-by-side in their shipping containers.

- Store circuit packs in a clean, dry area.
- When tape cartridges have been subjected to temperature extremes, allow them to stabilize to room temperature before unpacking. This prevents the accumulation of condensation on the tapes.



**CAUTION**

**Risk of equipment damage**

Wear an antistatic wrist strap when handling components. As an additional safety measure, handle components by their edges and, whenever possible, with the loosened packing material still around them.

## Receiving the IPE Module and Application Module components

Use the following procedure to check all items received against the order form and shipper attached to each carton.

- 1 Remove each item from the carton.
- 2 Compare each item's part number against the part number listed on the shipper.
- 3 Verify that the shipped quantity and the quantity received match.
- 4 Verify that the order quantity on the shipper matches the shipped quantity.
- 5 Report all discrepancies to your Nortel support personnel. Use the NTI number in the top right corner of the shipper as a reference.

## Unpacking the IPE Module and Application Module components

After you have received and checked the IPE Module or Application Module components, use the following procedure to unpack them.

The IPE Module and Application Module are carefully packaged for maximum protection against physical damage during shipment. Retain the packaging material in case any equipment needs to be returned.

- 1 Move the equipment (on its shipping pallet, if it was received on a pallet) as close as possible to its final location.
- 2 If the equipment is mounted on a pallet, do the following:
  - Remove any shipping bolts from the underside of the pallet.
  - Gently move the equipment from the pallet and place it as close as possible to the final location .
- 3 Cut any remaining strapping and tape. Remove the transport protection devices and loosen the stretch wrap film (if provided) from the equipment. This stretch wrap film can be removed at your own discretion; however, it is advisable to keep the wrapping loosely around the equipment during handling.
- 4 Remove any miscellaneous equipment (such as the disk unit, power supplies, and tape unit for the Application Module) from the carton and check for any obvious missing parts or breakages.
- 5 Check printed circuit packs for any loose parts, broken edges, and other obvious damage that may have occurred during transport.
- 6 Inspect the equipment for the following:
  - damaged connectors or connectors containing foreign material
  - defects in the molded plastic covers
  - any loose items remaining in the shipping cartons
- 7 Using a flashlight, check that there are no broken pins or shrouds on the backplane connectors.
- 8 Check tape cartridges to ensure that they are not broken. If a tape appears to be resting against the front (plastic) surface of the cartridge, give the cartridge a gentle tap to relieve the tape. You do not need to center the tape.

- 9 If all the hardware components appear to be in order, repack them and store them in a safe place until you are ready to install them. Return any defective items to the manufacturer with a description of the defects. You should use the original containers if possible. If an original container is not available, wrap the item several times in air-cap cushion material, place it in a suitable cardboard container, and surround it with paper packing material. Ensure that the cardboard container is sufficiently strong to handle the weight of the item.

*Note:* Return to Chapter 5, “Hardware installation overview” for the next procedure.



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## Chapter 8: Hardware installation procedures

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**CAUTION****Risk of data loss**

Ensure that the breaker switch on the AEM is in the Off position before following the procedures for installing an Application Module.

You should use this chapter in conjunction with Chapter 5, “Hardware installation overview,” which links hardware installation procedures in easily understood tables (Tables 11 and 12).

This chapter provides information on the installation of the IPE Module (Option 11 and Options 21–81) and the Application Module hardware components. High-level installation procedures for all three hardware options are followed by procedures for installing components.

**ATTENTION**

Before proceeding with any hardware installation, upgrade, or update, ensure that all discrepancies found in Chapter 6, “Site survey/installation checklist” have been corrected.

## Installing the IPE Module

The following procedure for installing the actual IPE Module is only one of a series of procedures you should perform to install an IPE Module. The series is shown in Table 11 in Chapter 5, “Hardware installation overview.”

Before you start the following procedure, ensure that you have

- read Chapter 4, “Meridian Link/CCR hardware”
- completed steps 1 through 3 in Table 11

If you have an older CE/PE or IPE shelf, you may need to reroute some backplane cables before you install the IPE Module. If you have an older CE/PE or IPE shelf, or if you are not sure whether you have an older shelf, refer to “Backplane cable rerouting for Options 21–81 CE/PE and IPE backplanes” in Chapter 9, “Meridian Link/CCR cabling interface”.



### CAUTION

#### Risk of potential data loss

When installing the IPE Module, you do not need to power down or stop the Meridian 1 system prior to installation, however the IPE Module *must* be gracefully powered down before removal or insertion.

- 1 Configure the IPE Module ports as DCE or DTE.

IPE Modules are shipped with the following default configuration. If you are using the standard configuration described in the following table, you should not need to change the settings. Figure 30 shows the jumper settings for the default configuration.

**Table 28**  
**Default DCE/DTE settings**

Port	Setting	Use
1	DCE	Console
2	DCE	Modem
3	DTE	Conshare
4	DTE	Meridian Mail Link
5	DTE	AML
6	DCE	Terminal/printer (CCR) X.25 Host Link (Meridian Link)
7	DCE	Terminal/printer
8	DCE	Terminal/printer

Refer to Figure 30 (Part 2) for a diagram of the correct jumper settings. To change the configuration of a port after you have installed an IPE Module, you must remove the IPE Module from the Meridian 1 IPE Shelf or Option 11 cabinet. For more information on DCE and DTE, refer to Chapter 11, “Peripheral device cabling interface.”



**CAUTION**  
**Risk of data loss**

Do not install the IPE Module if the IPE Module power push button is in the On position.

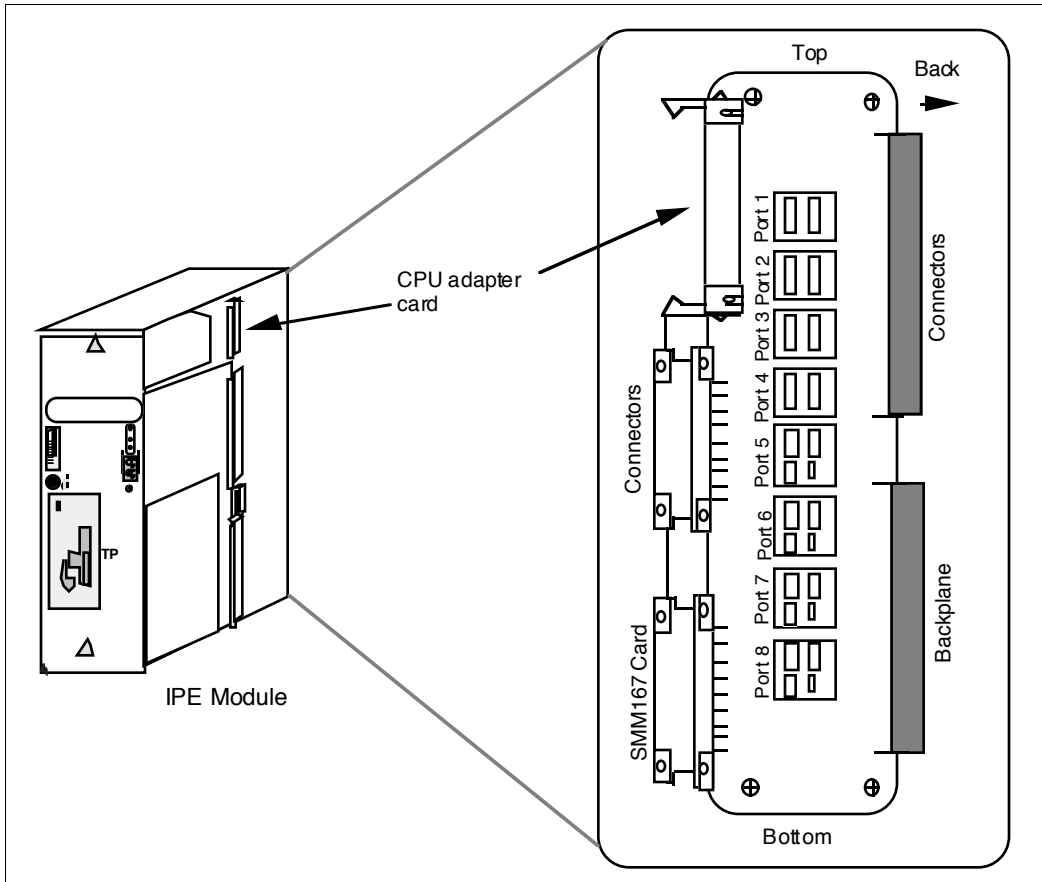
- 2 Choose where you want to install the IPE Module. An Option 11 IPE Module occupies three consecutive slots in an Option 11 cabinet. An Options 21–81 IPE Module occupies four consecutive slots on an IPE shelf. For more information, refer to Chapter 4, “Meridian Link/CCR hardware.”

- 3 Slowly slide the module along the slots into the shelf or cabinet, making sure the latches at the top and bottom of the module are unlatched. Press the faceplate to ensure that the module is firmly in place. Make sure the latches at the top and bottom of the module are secured.
- 4 For information on cabling the IPE Module to external equipment, refer to the “Meridian Link/CCR cabling interface” chapter.

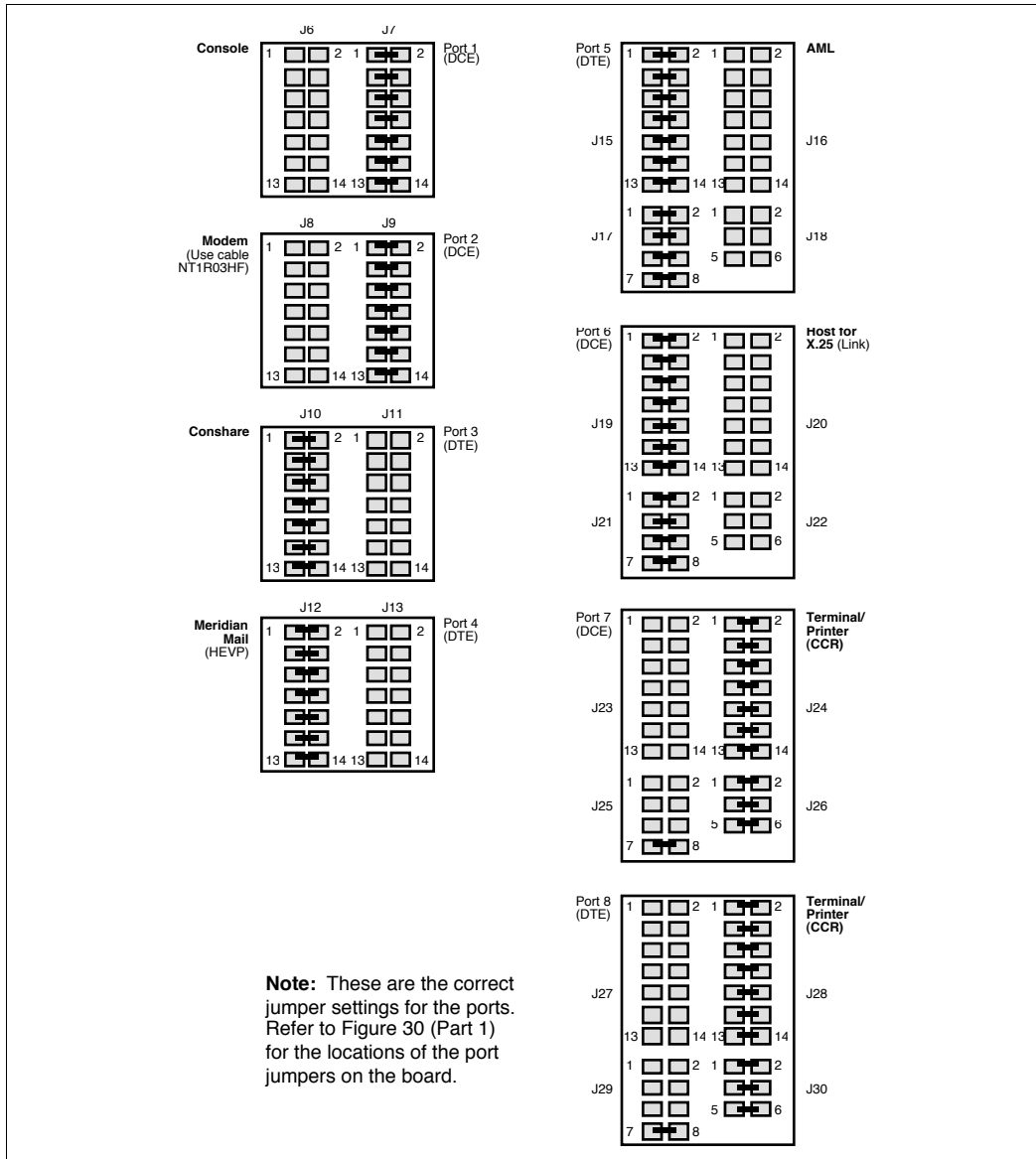
**Note:** Return to Chapter 5, “Hardware installation overview” for the next procedure.

Figure 30 shows the port configuration settings on the CPU adapter card.

**Figure 30**  
**Port configuration settings (Part 1)**



**Figure 30**  
**Port configuration settings (Part 2)**



## Installing the Application Module

The following procedure for installing the Application Module is only one of a series of procedures you should perform to install an Application Module. The series is shown in Table 12 in Chapter 5, “Hardware installation overview.” Ensure that you have completed steps 1 through 5 in Table 12 before you start the following procedure.



### CAUTION

#### Risk of personal injury

Ensure that the circuit breaker of the Application Module is in the off position.

Be careful when installing an Application Module because it is heavy. This is usually a two-person job.

You can install an Application Module in either side of an AEM (Application Equipment Module). Follow these steps:

- 1 Hold the Application Module by the bar on the top and align the module with the guides at the top and bottom of the cage. Slowly slide the unit into the AEM.
- 2 Tighten the four screws on the front of the module.
- 3 Position the subpanel, universal I/O panel, or generic I/O panel (as supplied) at the rear of the module. Tighten or reinstall the screws that secure the panel.
- 4 Attach the orange logic-return ground wire to the screw on the terminal block at the bottom of the AEM.
- 5 Connect the yellow and gray cable from the power sense card to the appropriate plug on the power monitor. If the module is on the right side of the AEM (from the rear view), the cable connects to P1 on the power monitor. If the module is on the left side, the cable connects to P2.

**Note:** A connector housing surrounds the pins on the P1 and P2 connectors. Make sure you center the cable connector on the pins within the housing.

- 6 Plug the power harness into the connector on the MPDU (P3 if the module is installed next to the MPDU, P4 if the module is on the other side of the AEM).

**Note:** Make sure you connect all the cables securely.

- 7 Install the power supply and the disk/tape unit (refer to “Installing the power supply and disk/tape unit (Application Module)” in the next section).

**Note:** Make sure you connect all the cables securely.

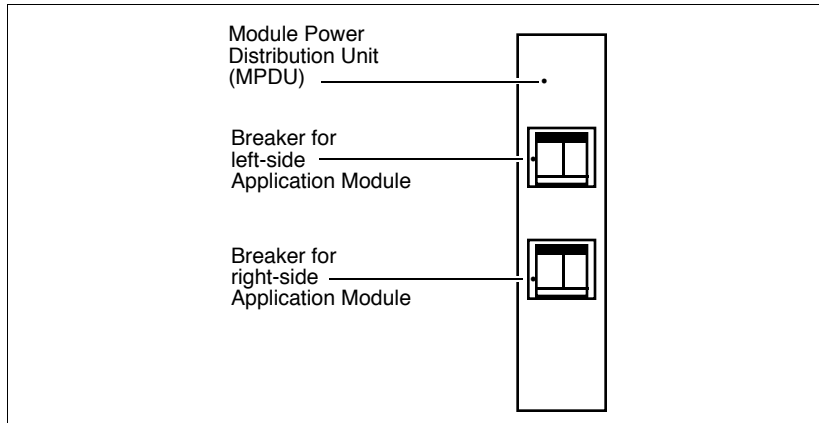


## Installing the power supply and disk/tape unit (Application Module)

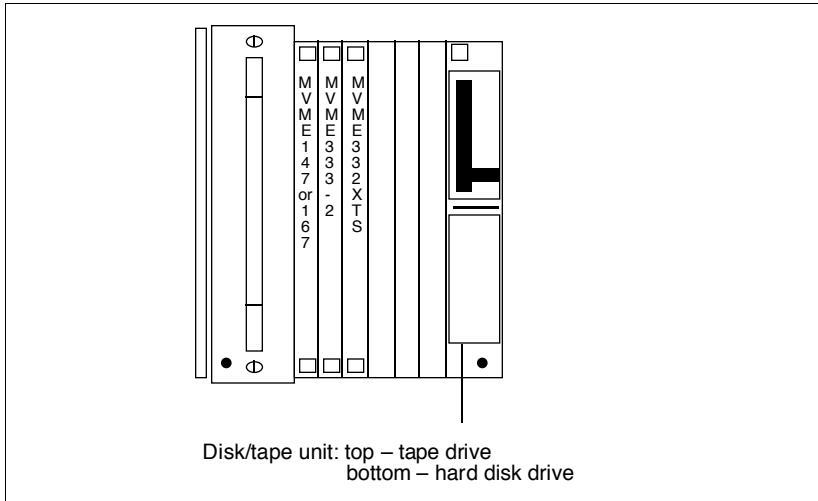
The Application Module power supply and disk/tape units are packaged separately for protection during shipping. Both units should be installed in the Application Module after it has been installed in the AEM and before external equipment is cabled to the Application Module.

- 1 Install the power supply and the disk tape unit in the Application Module as follows:
  - Make sure the associated circuit breaker on the Module Power Distribution Unit (MPDU) is set to OFF (the down position). As illustrated in Figure 31, the top breaker powers the module next to the MPDU (on the left side as you face the AEM), and the bottom breaker powers the module on the right-side.
  - Gripping the handle at the front of the power supply faceplate, line up the power supply with the guides at the top and bottom of the module.
  - Slowly slide the power supply into the module until the faceplate is flush with the front of the module.
  - Tighten the two screws at the top and bottom of the power supply faceplate.

**Figure 31**  
**Module Power Distribution Unit breakers**



**Figure 32**  
**Disk/tape unit**



- 2 Slide the disk/tape unit into the slot at the far right of the Application Module (facing the AEM).  
Push the unit in hard and make sure the tabs at the top and bottom of the unit lock into position. Tighten the two screws on the front of the unit.

## Checking the card option settings (Application Module)

The cards are shipped with the settings preset at the factory, and they need to be checked only if you suspect a problem, or if you need to configure the host computer port (on the MVME705B card) for DTE operation. If you want to check the settings during installation, do so before installing the Application Module.

The following procedure for checking the transition card option settings is one of a series of procedures you perform to install an Application Module. The series is shown in Table 12 in Chapter 5, “Hardware installation overview.”

To check the option settings on the MVME712A, MVME712AM, MVME712M, and MVME705B transition cards, you must remove the cards from the rear of the Application Module. If the Application Module is installed on the right side of the AEM (when viewed from the front of the AEM), it must temporarily be removed to access the transition cards. You do not need to remove the cards in the front of the Application Module to remove the module.

**Note:** If the Application Module is installed on the left side of the AEM (facing the AEM), you can check the transition cards without removing the Application Module.



### CAUTION

#### Risk of personal injury

Be careful when installing an Application Module because it is heavy. This is usually a two-person job.

If your Application Module does not have CCR activated, the MVME332XT(S) card may not be present. If so, skip steps 1–3 and begin at step 4.

- 1 Remove the screws at the top and bottom of the MVME332XT(S) card faceplate.
- 2 Pull the MVME332XT(S) card out of the Application Module.  
Check the switches as indicated in Tables 29 and 30.

**Table 29**  
**MVME332XT ACC card switch settings**

Switch	Position							
	1	2	3	4	5	6	7	8
S1	on	off	off	off	off	on	on	on
S2	off	off	on	on				

**Table 30**  
**MVME332XT ACC card jumper settings**

Block	Jumper setting
J1	1–2, 5–6, 7–9, 8–10, 11–12, 15–17
J4	1–2

- 3 Replace the MVME332XT(S) card and replace the screws at the top and bottom of the faceplate.
- 4 Remove the screws at the top and bottom of the MVME333-2 XCC card faceplate.
- 5 Pull the MVME333-2 XCC card out of the Application Module.  
Check the switches as indicated in Table 31 and Figure 34.

**Table 31**  
**MVME333-2 XCC card jumper settings**

Block	Jumper setting
K1	2 and 4, 6 and 8, 10 and 12, 13–14, 15–16, 23–24
K2	none
K3	1–2, 5–6, 7–8, 9–10
K4	none
K5	1–2, 3–4
K6	5–6
K7	5–6
K8	none
K9	1–2

- 6 Replace the MVME333-2 XCC card and replace the screws at the top and bottom of the faceplate.
- 7 If you are checking the option settings for an Application Module installed on the left side of the AEM, go to step 5. If the Application Module is preinstalled on the right side of the AEM, remove it as follows:
  - If you have an I/O subpanel, loosen the five spring-loaded screws that hold the I/O subpanel to the I/O assembly of the AEM. Gently set the panel in the back of the Application Module so the cables do not come in contact with the edges of the AEM.
  - If you have a universal I/O panel or a generic I/O panel, remove the screws at the edges of the I/O panel. Gently set the panel in the back of the Application Module.
  - Detach the orange logic-return ground wire that is screwed to the terminal block at the bottom of the AEM.
  - Unplug the yellow and gray cable (NT7D52AA) that connects the power sense card to the power monitor.

- Unplug the power harness from the connector (P3 or P4) on the MPDU. (The power harness has seven wires: two red, two black, one green, one blue, and one brown.)
  - Loosen the four screws on the front of the Application Module.
  - Hold the Application Module by the handles on each side and pull it out of the AEM. Before the Application Module is completely out, take hold of the bar on the top of the Application Module to lift it out and down.
- 8** Remove the screws at the top and bottom of the transition card faceplates.
- 9** Pull the MVME705B and MVME712 transition cards out of the Application Module as follows:
- Disconnect the ribbon cable from each transition card.
  - Check the jumpers on the MVME705B transition card as indicated in Tables 32 and 33, and Figure 35. Change them if the host computer port on the card is to be set for DTE.

**Table 32**  
**Default DCE/DTE settings for MVME705B transition card**

Serial Port	Setting	Use
SP1	DTE	AML Link
SP2	DCE	X.25 Host Link (Meridian Link only)
SP3	DTE	Not used

**Table 33**  
**MVME705B jumper settings and cable connections**

Serial port	DCE mode	DTE mode
SP1	On header K6, place jumpers over pins 3–4, 7–8, 9–10 Plug the I/O cable into P14	On header K6, place jumpers over pins 1–2, 5–6 Plug the I/O cable into P13
SP3	On header K5, place jumpers over pins 3–4, 7–8, 9–10 Plug the I/O cable into P12	On header K5, place jumpers over pins 1–2, 5–6 Plug the I/O cable into P11

- Check the jumpers on the MVME712 transition card as indicated in Figure 36 (for MVME712AM), Figure 37 (for MVME712A) or Figure 38 (for MVME712M). Tables 34 through 36 show the default setups for the transition cards.

**Table 34**  
**Default DCE/DTE settings for MVME712AM transition card**

Serial Port	Setting	Use
SP1	DCE	Console
SP2	—	Internal Modem
SP3	DCE	Conshare
SP4	DCE	Meridian Mail Link (Meridian Link only)

**Table 35**  
**Default DCE/DTE settings for MVME712A transition card**

Serial Port	Setting	Use
SP1	DCE	Console
SP2	DCE	External Modem
SP3	DCE	Conshare
SP4	DCE	Meridian Mail Link (Meridian Link only)

**Table 36**  
**Default DCE/DTE settings for MVME712M transition card**

Serial Port	Setting	Use
SP1	DCE	Console
SP2	DTE	External Modem
SP3	DTE	Conshare
SP4	DTE	Meridian Mail Link (Meridian Link only)

- The NT6D51AA card, if present, has no option settings.
- 10** Reconnect the ribbon cables to the transition cards as follows:
- Connect the cable from the MVME333-2 XCC card to the MVME705B transition card.
  - Connect the cable from the P2 adapter board to the MVME712 transition card.
- 11** Reinstall the transition cards in the Application Module. Push the cards in until the faceplates are flush with the front of the module.
- 12** Install the screws at the top and bottom of the transition card faceplates.
- 13** Reinstall the Application Module (if necessary) as follows:
- Hold the Application Module by the bar on the top and position it in the AEM. Slide the unit into the AEM.
  - Tighten the four screws on the front of the Application Module.
  - Position the I/O subpanel, universal I/O panel, or generic I/O panel at the rear of the Application Module. Tighten or reinstall the screws that secure the panel.
  - Attach the orange logic-return ground wire to the screw on the terminal block at the bottom of the AEM.
  - Connect the yellow and gray cable from the power sense card to the appropriate plug on the power monitor.
- If the Application Module is on the right side of the AEM (from the rear view), the cable connects to P1 on the power monitor. If the Application Module is on the left side of the AEM, the cable connects to P2.



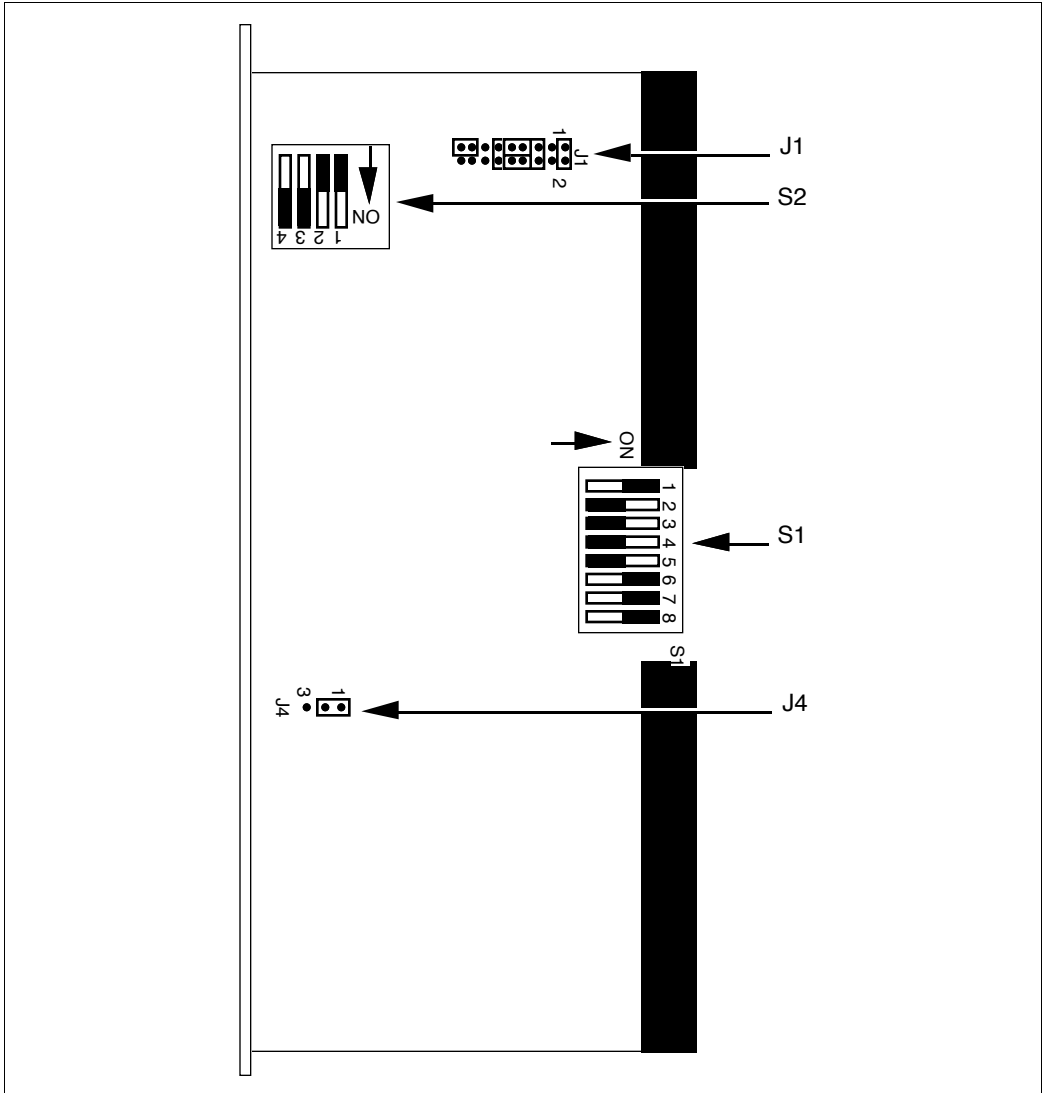
**Note:** A connector housing surrounds the pins on the P1 and P2 connectors. Make sure you center the cable connector on the pins within the housing.

- Plug the power harness into the connector on the MPDU (P3 if the Application Module is installed next to the MPDU, P4 if the Application Module is on the other side of the AEM).

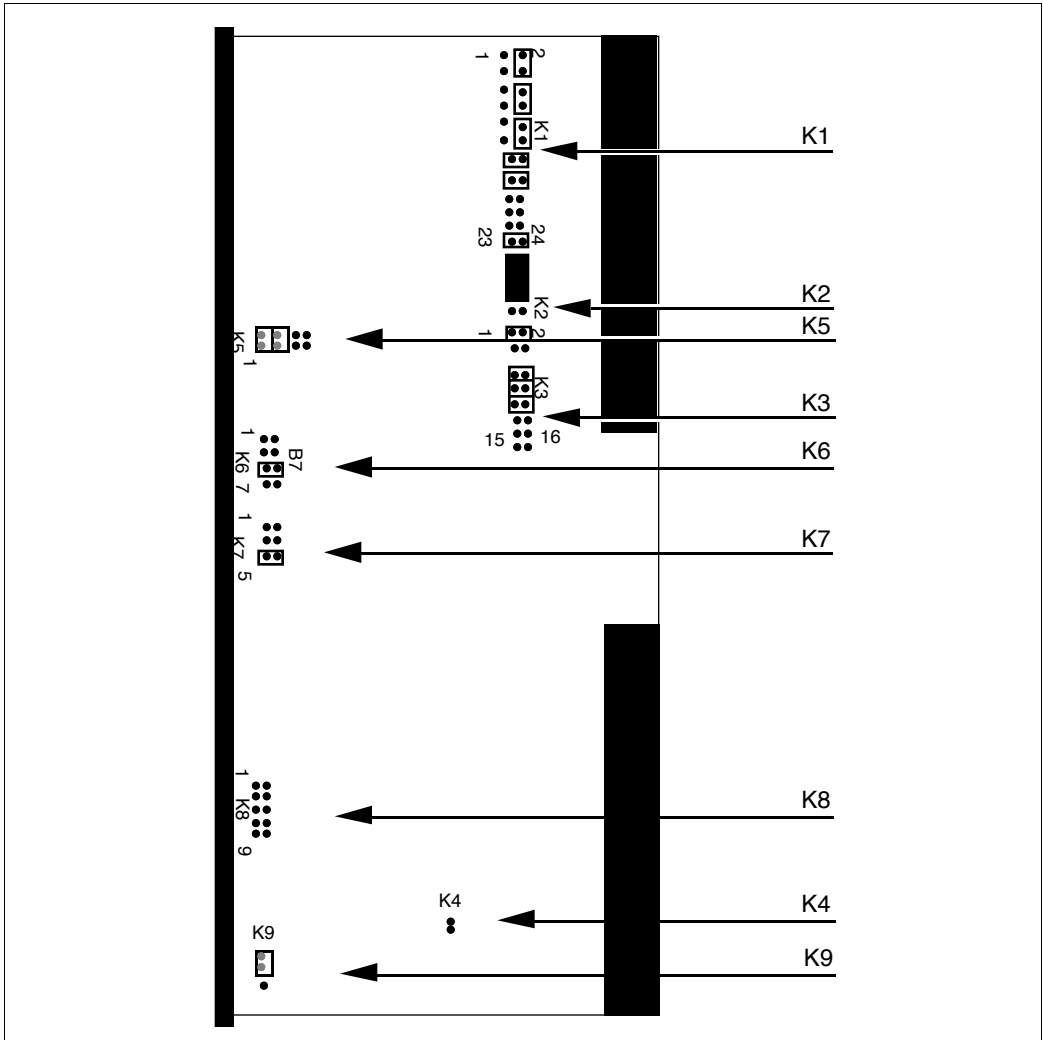
**Note:** Make sure you connect all the cables securely.

**Note:** Return to Chapter 5, “Hardware installation overview” for the next procedure (Table 12).

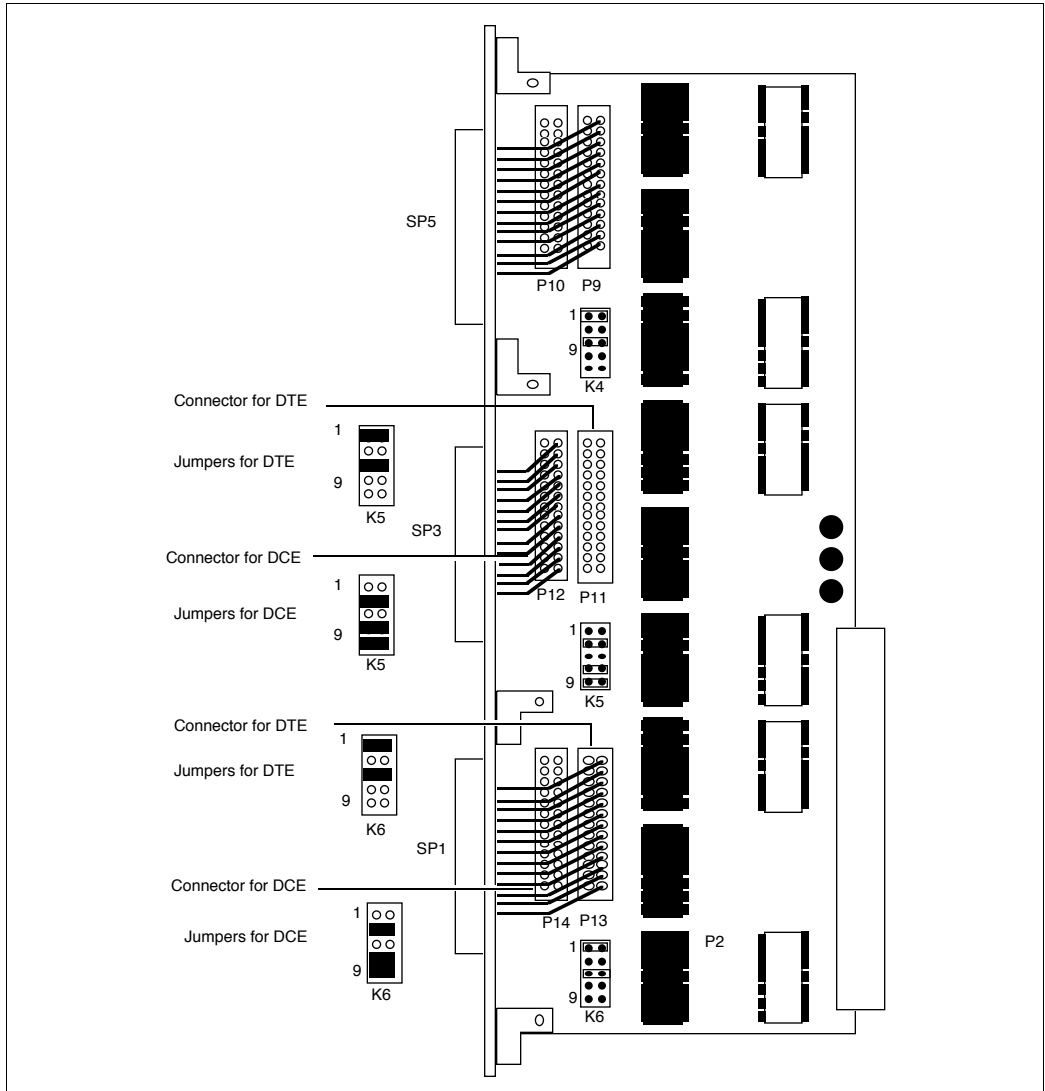
**Figure 33**  
**MVME332XTS transition card serial port configuration**



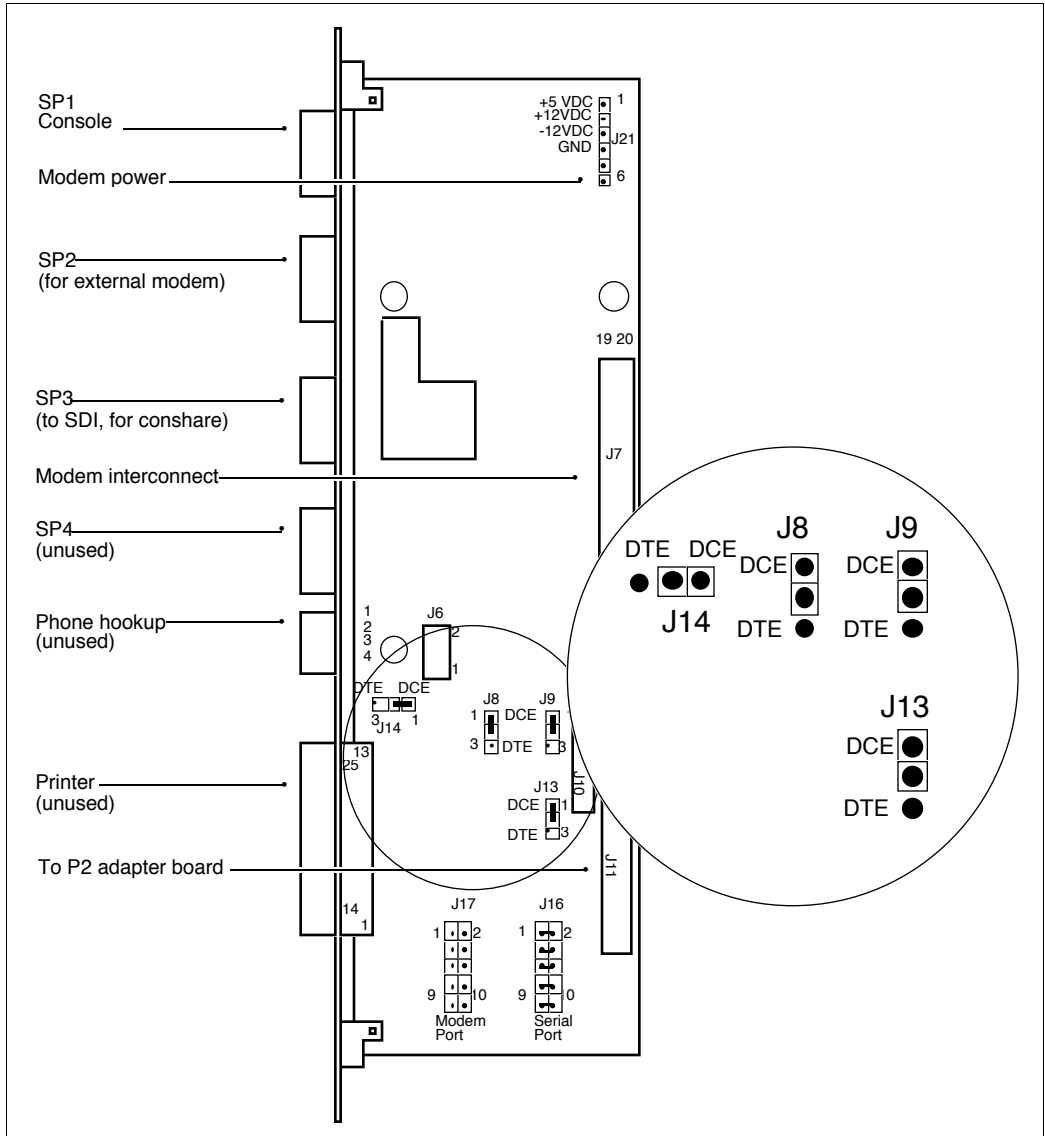
**Figure 34**  
**MVME333-2 transition card serial port configuration**



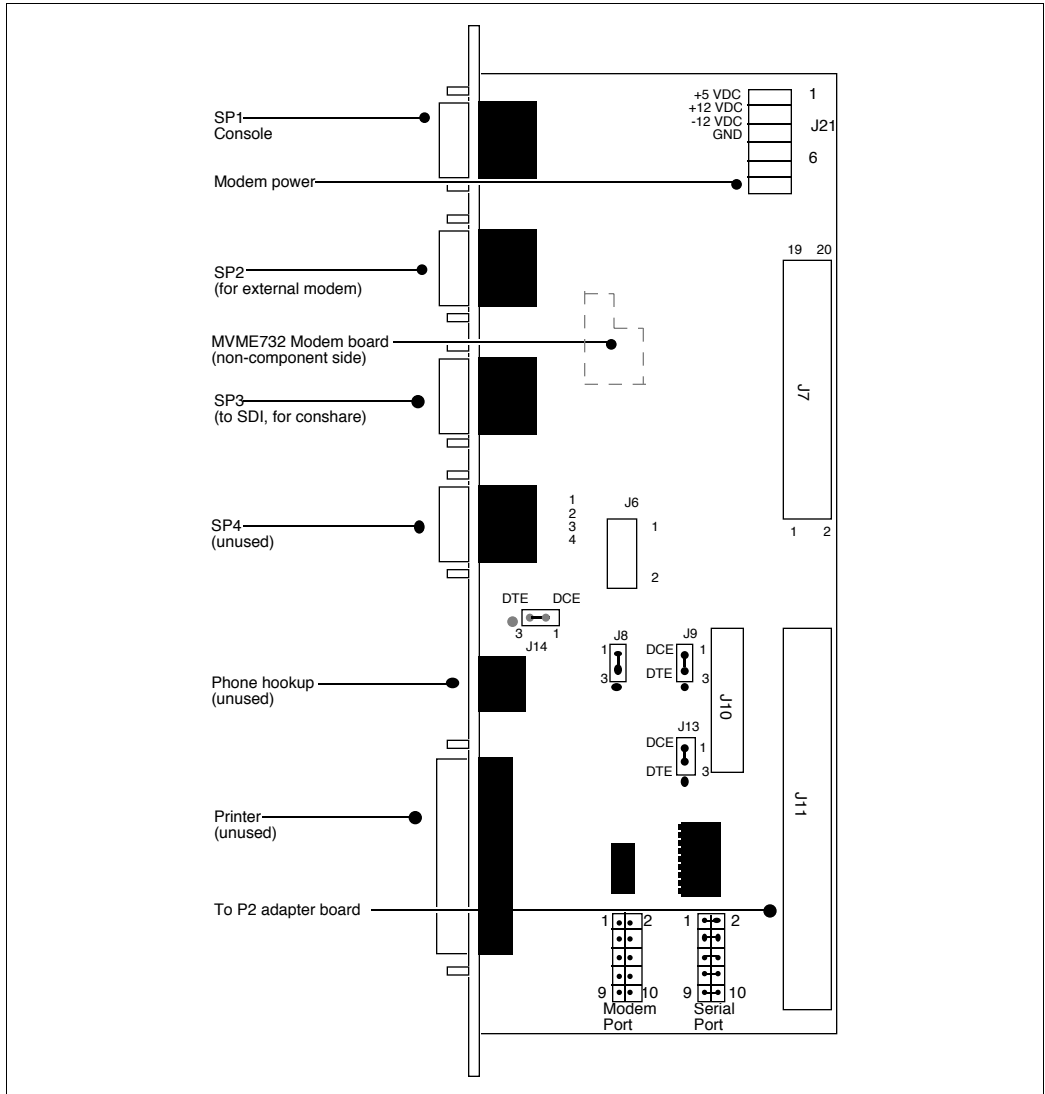
**Figure 35**  
**MVME705B transition card serial port configuration**



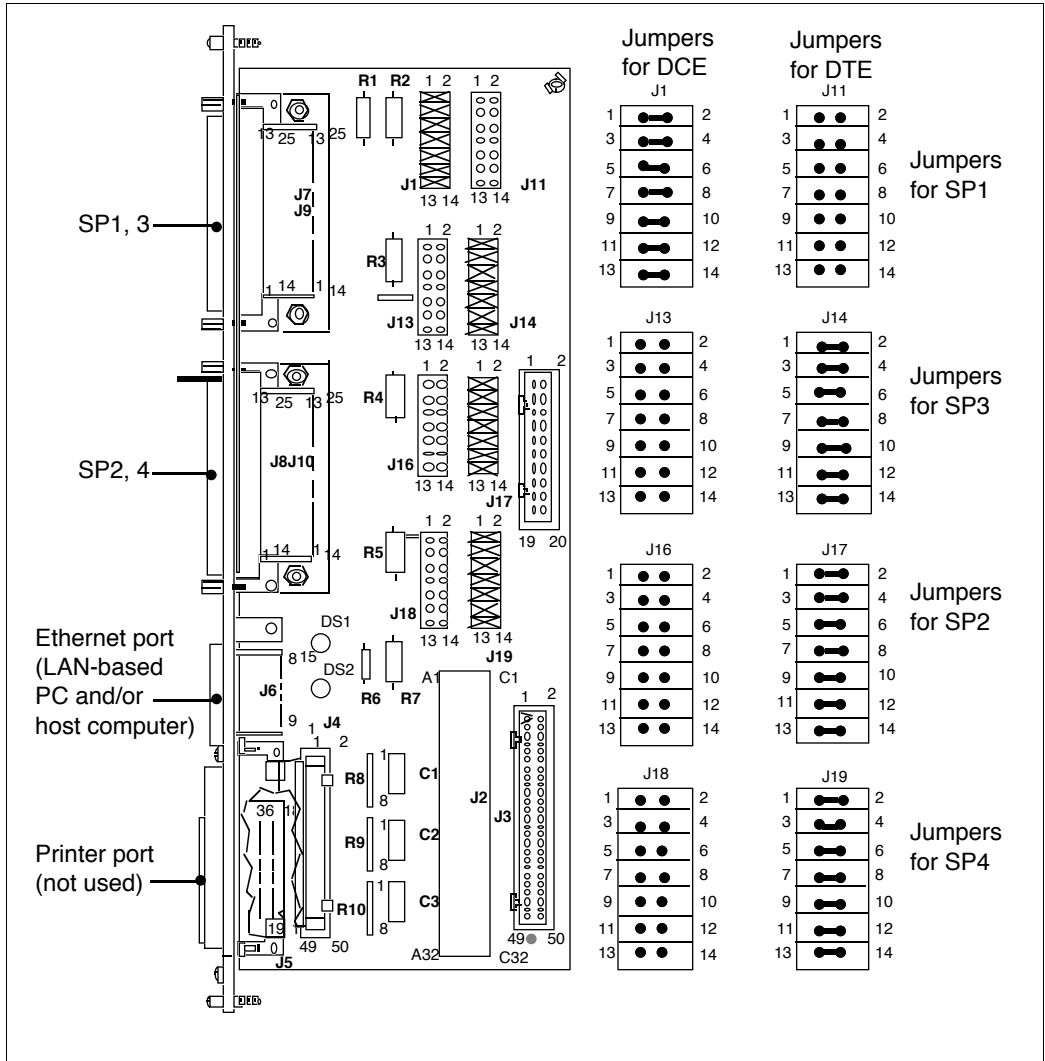
**Figure 36**  
**MVME712AM transition card configuration**



**Figure 37**  
**MVME712A transition card configuration**



**Figure 38**  
**MVME712M card with jumpers**



## Installing an NTAK02 SDI/DCH card

On an Option 11 system, if there is no port available on the CPU/Conf or TDS/DTR cards, you can obtain additional SDI or ESDI ports by installing an NTAK02 SDI/DCH card before the IPE Module is configured.

This card provides the communication connection for the AML link from the Option 11 to the IPE Module. The Option 11 port used for the AML link connection must be configured for DCE and RS-232, and the switches set for ESDI.

This card also provides a connection for the conshare feature. The port used for conshare must be configured for DCE and the switches set for SDI.

- 1 Unpack and inspect the card.
- 2 Set the switches as shown in Table 37. Set the jumpers as shown in Table 38.
- 3 Insert the card into a common equipment slot and lock it into position.

**Table 37**  
**NTAK02 SDI/DCH card switch settings**

Switch 1-1	Switch 1-2	Port 0	Port 1
Off	Off	SDI	DCH
Off	On	SDI	DPNSS
On	On	—	ESDI
Switch 1-3	Switch 1-4	Port 2	Port 3
Off	Off	SDI	DCH
Off	On	SDI	DPNSS
On	On	—	ESDI

**Note:** For AML link, port must be set for ESDI.

**Note:** SDI ports are 0 and 2. ESDI ports are 1 and 3.



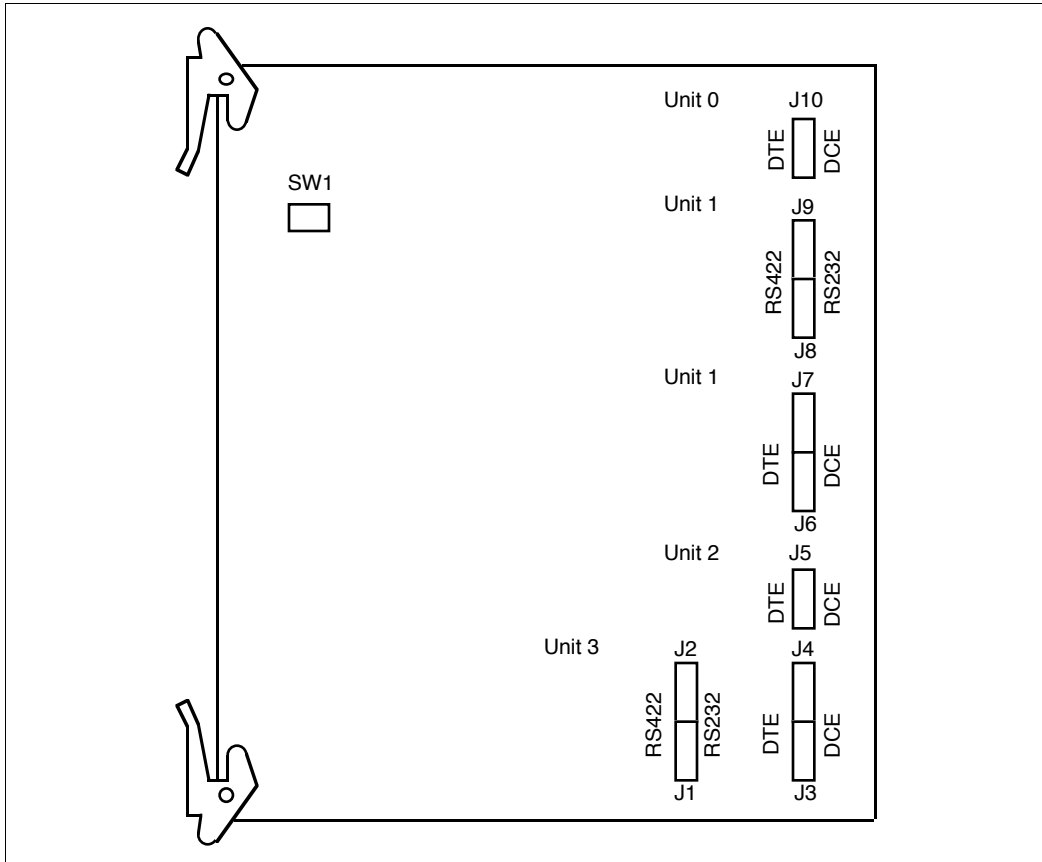
**Table 38**  
**NTAK02 SDI/DCH card jumper settings**

Port	Jumper Location	Strap for DTE	Strap for DCE	Jumper Location	Strap for RS-422	Strap for RS-232
0	J10	C to B	B to A			
1	J7 J6	C to B C to B	B to A B to A	J9 J8	C to B C to B	B to A B to A
2	J5	C to B	B to A			
3	J4 J3	C to B C to B	B to A B to A	J2 J1	C to B C to B	B to A B to A

**Note:** For AML link, strap for DCE RS-232.

For cabling, refer to “SDI and ESDI/MSDL cabling (Option 11 IPE Module only)” in Chapter 9, “Meridian Link/CCR interface cabling.”

**Figure 39**  
**NTAK02 SDI/DCH card jumper and switch locations**



## Installing an ESDI or MSDL card

On the Meridian 1, a QPC513 ESDI card (vintage G or later) or NT6D80 MSDL card must have an available port. If there is no ESDI/MSDL port available, install a QPC513 ESDI or NT6D80 MSDL card before the IPE Module or the Application Module is configured.

**Note:** If using a redundant Meridian Link, an additional port is required for the AML to connect the redundant Meridian Link Module to the Meridian 1.

- 1 Unpack and inspect the card.
- 2 ESDI card only—set the faceplate switch to DIS.
- 3 ESDI card only—set the jumpers and switches as follows:
  - Set the jumpers for the appropriate port to reflect DCE and RS-232 operation, as shown in Figure 40.
  - Set the port address switch S2 to indicate the device number, as shown in Table 40.

The location of the switch is shown in Figure 41. The device number should match the value configured in LD 17 (either the ADAN prompt in X11 Release 17 or X11 International Phase 7, or DNUM prompt in X11 Release 18 or later software). Use LD 22 to obtain a printout of the ADAN information. See Chapter 12, “Meridian 1 configuration for Meridian Link/CCR” for LD 17 configuration.

- 4 MSDL card only—set the switches as follows:
  - Set the switches to reflect RS-232 operation, as shown in Figure 40 and Table 39. (DCE operation is configured in software for RS-232.)
  - Set the physical card address switches (“Tens” and “Ones”) to indicate the device number. The physical card address is critical and should match the value configured for the device number (DNUM) in LD 17. Use LD 22 to obtain a printout of the ADAN information.

The location of the switches is shown in Figure 40. The device number should match the value configured in LD 17 (DNUM prompt). See Chapter 12, “Meridian 1 configuration for Meridian Link/CCR” for LD 17 configuration.

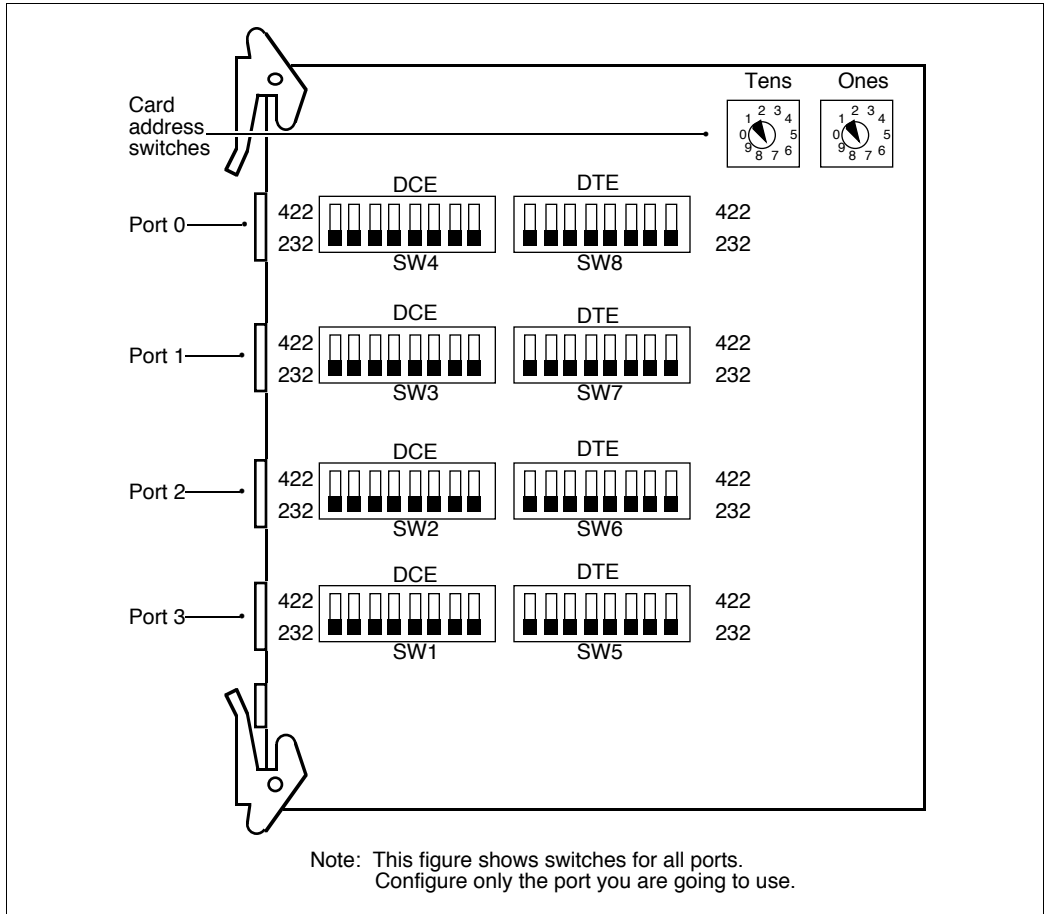
**Note:** If the Single Terminal Access (STA) feature is present, port 0 is reserved for the STA administration terminal.

- 5 Insert the card into a common equipment slot and lock it into position.
- 6 ESDI card only—set the faceplate switch to ENB.

**Table 39**  
**NT6D80 MSDL card switch settings**

RS-232-D DTE or DCE*	<b>Port 0—SW4</b> all off	<b>Port 0—SW8</b> all off
RS-232-D DTE or DCE*	<b>Port 1—SW3</b> all off	<b>Port 1—SW7</b> all off
RS-232-D DTE or DCE*	<b>Port 2—SW2</b> all off	<b>Port 2—SW6</b> all off
RS-232-D DTE or DCE*	<b>Port 3—SW1</b> all off	<b>Port 3—SW5</b> all off
* RS-232-D DTE and DCE modes are software configured.		

**Figure 40**  
**NT6D80 MSDL card jumper and switch locations**



**Table 40 (Part 1)**  
**Program socket selection**

Option	Port no.	Socket number	
DTE (terminal)	1	UA10	UA12
	2	UA17	UA19
DCE (modem)	1	UA9	UA11
	2	UA16	UA18
RS-232-C interface	1	UB9	UB11
	2	UB16	UB18
High-speed interface	1	UB10	UB12
	2	UB17	UB19

Set as DCE to emulate modem.

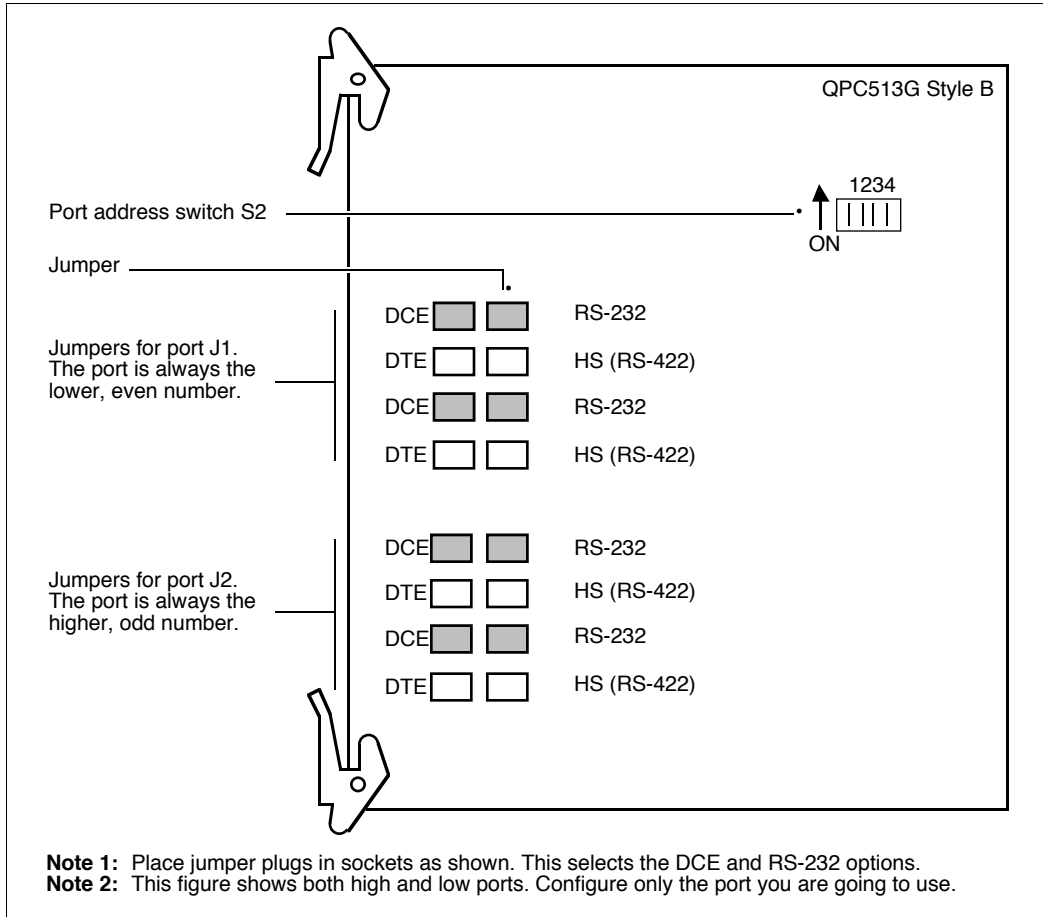
**Table 40 (Part 2)**  
**Switch S2—Address selection**

Device no.	Style A				Style B			
	1	2	3	4	1	2	3	4
0-1	off	off	off	-	off	off	off	-
2-3	on	off	off	-	off	off	on	-
4-5	off	on	off	-	off	on	off	-
6-7	on	on	off	-	off	on	on	-
8-9	off	off	on	-	on	off	off	-
10-11	on	off	on	-	on	off	on	-
12-13	off	on	on	-	on	on	off	-
14-15	on	on	on	-	on	on	on	-

ON = synchronous mode; OFF = asynchronous mode.

Asynchronous mode is not supported. However, in releases prior to X11 Release 18, asynchronous mode may work in some applications. With Release 18 and later, asynchronous mode will not work.

**Figure 41**  
**QPC513 ESDI card jumper and switch locations**







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## Chapter 9: Meridian Link/CCR interface cabling

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The cable requirements for the IPE Module and the Application Module are completely different. For example, the Application Module uses power harness cables, but IPE Modules receive power from the IPE backplane and have no power cabling.

This chapter describes cabling required for the IPE Module and the Application Module, and also provides procedures for connecting the IPE Module and Application Module to external equipment.

### IPE Module cabling

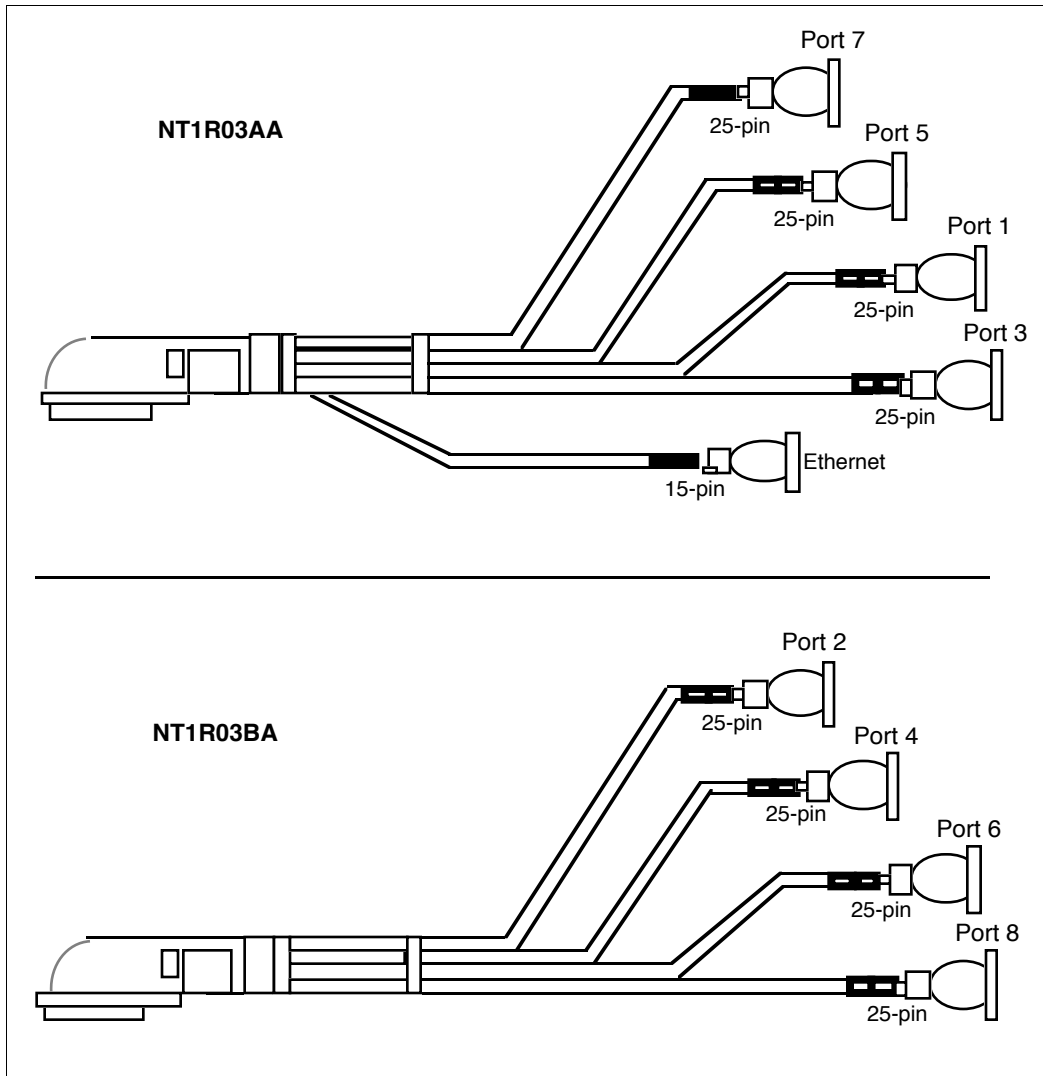
The IPE Module has two types of cable:

- IPE Module cables
- external cables (connect the IPE Module cables to the Meridian 1 system, the system console, the host computer, and Meridian Mail as required)

#### IPE Module cables

IPE Module cables connect the connector ports on the connector panel (for an Option 11 system) or on an I/O panel (for an Options 21–81 system) to the external cables. IPE Module cables also provide port connectors for the IPE Module. Figure 42 shows an illustration of the IPE Module octopus cables NT1R03AA and NT1R03BA. Table 41 lists the IPE Module cables. The Option 11 IPE Module requires extension cables to connect the recessed connector panel to the IPE Module octopus cables.

**Figure 42**  
**NT1R03AA and NT1R03BA IPE Module cables**



**Table 41**  
**IPE Module cables**

<b>Part number</b>	<b>Cable description and application</b>
NT1R03AA (A0400295)	Shielded 4-port octopus cable: has a 50-pin connector for the connector panel or I/O panel, four 25-pin port connectors; and a 15-pin Ethernet connector; connects the I/O panel to external cables
NT1R03BA (A0400297)	Shielded 4-port octopus cable: has a 50-pin connector for the connector panel or I/O panel, and four 25-pin port connectors; connects the I/O panel to external cables
NT1R03CA (A0401483)	Option 11 extension cable: 50-pin connector cable; connects the connector panel to the NT1R03AA and BA cables

## External I/O cables

Table 42 lists external I/O cables that connect ports on the IPE Module cable to an SDI port, the ESDI/MSDL port, and consoles.

**Table 42**  
**Cables from the IPE Module ports to external equipment**

Part number	Length	Cable description and application
NT1R03HF (A0402669)	3 m (10 ft.)	Modem cable: connects port 2 of the NT1R03BA cable to the external modem
NT8D93AJ (A0357270) (Options 21–81 only)	5 m (16 ft.)	25-pin SDI cable: connects port 3 of the NT1R03AA cable to the SDI Paddle Board
NT8D93AW (A0357271) (Options 21–81 only)	15 m (48 ft.)	
NTAK19AA (A0372718) (Option 11 only, except Option 11E)	1.8 m (6 ft.)	2-port SDI cable: connects port 3 of the NT1R03AA cable to the NTAK03AA TDS/DTR card
NTAK19BA (A0372719) (Option 11 only)	1.8 m (6 ft.)	4-port SDI cable: connects port 3 of the NT1R03AA cable to the NTAK02AA SDI/DCH card
NT1R03DB (A0402335)	60 cm (2 ft.)	25-pin extension cable: connects ports of cables NT1R03AA and NT1R03BA to external equipment  <b>Note:</b> This cable is also used for MSDL and AML on Options 21–81.
NT1R03DC (A0402336)	1.2 m (4 ft.)	
NT1R03DF (A0402337)	3 m (10 ft.)	
NT1R03DP (A0402338)	8 m (25 ft.)	
NT1R03DV (A0402339)	14 m (45 ft.)	
NT1R03EB (A0402330)	60 cm (2 ft.)	
NT1R03EC (A0402331)	1.2 m (4 ft.)	
NT1R03EF (A0402332)	3 m (10 ft.)	
NT1R03EP (A0402333)	8 m (25 ft.)	
NT1R03EV (A0402334)	14 m (45 ft.)	

## **External I/O cable pinouts (IPE Module)**

This section provides pinouts for the following cables:

- NT1R03D
- NT1R03E
- NT1R03HF
- NT1R03AA
- NT1R03BA
- NT1R03CA
- NT8D82
- NT8D93A
- NTND27AB
- NTAK19AA
- NTAK19BA

**Table 43**  
**NT1R03D cable pinouts (IPE Module)**

<b>Port pin</b>	<b>Signal</b>	<b>External equipment pin</b>
2	TD	2
3	RD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	GND	7
8	CD	8
15	SCT	15
17	SCR	17
20	DTR	20
24	SCTE	24

**Table 44**  
**NT1R03E cable pinouts (IPE Module)**

<b>Port pin</b>	<b>Signal</b>	<b>External equipment pin</b>
2	TD	2
3	RD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	GND	7
8	CD	8
15	SCT	15
17	SCR	17
20	DTR	20
24	SCTE	24

**Table 45**  
**NT1R03HF cable pinouts (IPE Module)**

<b>Port pin</b>	<b>Signal</b>	<b>External equipment pin</b>
1	Shield	1
2	RD	3
3	TD	2
4	CTS	5
5	RTS	4
6	DSR	6
7	GND	7
8	DTR	20
20	DCD	8



**Table 46**  
**NT1R03AA 50-pin four-port cable pinout (IPE Module)**

From DB-50	To DB-25	Port	Signal name	From DB-50	To DB-25	Port	Signal name
1	7	1	GND1	26	8	1	DCD1
2	2	1	TXD1	27	3	1	RXD1
3	4	1	RTS1	28	5	1	CTS1
4	6	1	DSR1	29	20	1	DTR1
5	7	3	GND3	30	8	3	DCD3
6	2	3	TXD3	31	3	3	RXD3
7	4	3	RTS3	32	5	3	CTS3
8	6	3	DSR3	33	20	3	DTR3
9	7	5	GND5	34	8	5	DCD5
10	2	5	TXD5	35	3	5	RXD5
11	4	5	RTS5	36	5	5	CTS5
12	6	5	DSR5	37	20	5	DTR5
13	15	5	TXCI5	38	17	5	RXCI5
14	22	5	RI5	39	24	5	TXCO5
15	7	7	GND7	40	8	7	DCD7
16	2	7	TXD7	41	3	7	RXD7
17	4	7	RTS7	42	5	7	CTS7
18	6	7	DSR7	43	20	7	DTR7
19	15	7	TXCI7	44	17	7	RXCI7
20	22	7	RI7	45	24	7	TXCO7
From DB-50	To DB-15	Port	Signal name	From DB-50	To DB-15	Port	Signal name
21	2	Ethernet	C+	46	9	Ethernet	C-
22	3	Ethernet	T+	47	10	Ethernet	T-
23	5	Ethernet	R+	48	12	Ethernet	R-
24	6	Ethernet	SG	49	13	Ethernet	+12VF
25		FGND	FGND	50		FGND	FGND

**Note:** Pins 21–24 and 46–49 of the NT1R03AA cable connect to pins 2, 3, 5, 6, 9, 10, 12, and 13 of the DB-15 Ethernet connector.

**Table 47**  
**NT1R03BA 50-pin four-port cable pinout (IPE Module)**

From DB-50	To DB-25	Port	Signal name	From DB-50	To DB-25	Port	Signal name
1	7	2	GND2	26	8	2	DCD2
2	2	2	TXD2	27	3	2	RXD2
3	4	2	RTS2	28	5	2	CTS2
4	6	2	DSR2	29	20	2	DTR2
5	7	4	GND4	30	8	4	DCD4
6	2	4	TXD4	31	3	4	RXD4
7	4	4	RTS4	32	5	4	CTS4
8	6	4	DSR4	33	20	4	DTR4
9	7	6	GND6	34	8	6	DCD6
10	2	6	TXD6	35	3	6	RXD6
11	4	6	RTS6	36	5	6	CTS6
12	6	6	DSR6	37	20	6	DTR6
13	15	6	TXCI6	38	17	6	RXCI6
14	22	6	RI6	39	24	6	TXCO6
15	7	8	GND8	40	8	8	DCD8
16	2	8	TXD8	41	3	8	RXD8
17	4	8	RTS8	42	5	8	CTS8
18	6	8	DSR8	43	20	8	DTR8
19	15	8	TXCI8	44	17	8	RXCI8
20	22	8	RI8	45	24	8	TXCO8
21			NC	46			NC
22			NC	47			NC
23			NC	48			NC
24			NC	49			NC
25		FGND	FGND	50		FGND	FGND

**Table 48**  
**NT1R03CA 50-pin four-port cable pinout (IPE Module)**

From DB-50 (male)	To port DB-50 (female)	Port*	Signal name	From DB-50 (male)	To port DB-50 (female)	Port*	Signal name
1	25	1 or 2	GND2	26	26	1 or 2	DCD2
2	2	1 or 2	TXD2	27	27	1 or 2	RXD2
3	3	1 or 2	RTS2	28	28	1 or 2	CTS2
4	4	1 or 2	DSR2	29	29	1 or 2	DTR2
5	25	3 or 4	GND4	30	30	3 or 4	DCD4
6	6	3 or 4	TXD4	31	31	3 or 4	RXD4
7	7	3 or 4	RTS4	32	32	3 or 4	CTS4
8	8	3 or 4	DSR4	33	33	3 or 4	DTR4
9	50	5 or 6	GND6	34	34	5 or 6	DCD6
10	10	5 or 6	TXD6	35	35	5 or 6	RXD6
11	11	5 or 6	RTS6	36	36	5 or 6	CTS6
12	12	5 or 6	DSR6	37	37	5 or 6	DTR6
13	13	5 or 6	TXCI6	38	38	5 or 6	RXCI6
14	14	5 or 6	RI6	39	39	5 or 6	TXCO6
15	50	7 or 8	GND8	40	40	7 or 8	DCD8
16	16	7 or 8	TXD8	41	41	7 or 8	RXD8
17	17	7 or 8	RTS8	42	42	7 or 8	CTS8
18	18	7 or 8	DSR8	43	43	7 or 8	DTR8
19	19	7 or 8	TXCI8	44	44	7 or 8	RXCI8
20	20	7 or 8	RI8	45	45	7 or 8	TXCO8
21	21	Ethernet	C+	46	46	Ethernet	C-
22	22	Ethernet	T+	47	47	Ethernet	T-
23	23	Ethernet	R+	48	48	Ethernet	R-
24	24	Ethernet	SG	49	49	Ethernet	+12VF
25	25	FGND	FGND	50	50	FGND	FGND

\* One NT1R03CA cable connects to ports 1, 3, 5, 7, and the Ethernet port. The other NT1R03CA cable connects to ports 2, 4, 6, and 8.

**Table 49**  
**NT8D93A cable pinout (IPE Module)**

<b>25-pin connector</b>	<b>Signal</b>	<b>9-pin connector</b>
2	TD	2
3	RD	8
4	RTS	4
5	CTS	9
6	DSR	8
7	GRD	3
8	CD	1
20	DTR	7

**Table 50**  
**NT8D82 cable pinout (IPE Module)**

25-pin connector	25-pin connector
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
—continued—	

**Table 50**  
**NT8D82 cable pinout (IPE Module) (continued)**

25-pin connector	25-pin connector
21	21
22	22
23	23
24	24
25	25
— end—	

**Table 51**  
**NT8D93A cable pinout (IPE Module)**

25-pin connector	Signal	9-pin connector
2	TD	2
3	RD	8
4	RTS	4
5	CTS	9
6	DSR	8
7	GRD	3
8	CD	1
20	DTR	7

**Table 52**  
**NTND27AB cable pinout (IPE Module)**

<b>26-pin connector</b>	<b>Signal</b>	<b>DB-25 connector</b>
1	GND	1
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	LTRN	7
8	DCD	8
20	DTR	20

**Table 53**  
**NTAK19AA cable pinout (IPE Module)**

<b>Meridian 1</b>	<b>Signal</b>	<b>Port 0 pin</b>
1	TDCD0	8
2	DSR0	20
3	RTS0	5
4	RXD0	2
26	DTR0	6
28	CTS0	4
29	TXD0	3
30	SG	7
		<b>Port 1 pin</b>
7	DSR1	20
8	RTS1	5
11	RXD1	2
13	TDCD1	8
31	DTR1	6
33	CTS1	4
36	TXD1	8
42	SG	7



**Table 54**  
**NTAK19BA cable pinout (IPE Module)**

Meridian 1	Signal	Port 0 pin
2	DSR0	6
3	RTS0	4
4	RXD0	3
26	DTR0	20
27	DCD0	8
28	CTS0	5
29	TXD0	2
30	SG0	7
		Port 1 pin
5	SCTEA1	24
6	SCTEB1	23
7	DSR1	6
8	RTS1	4
9	SCRA1	17
10	SCRB1	12
11	RXDA1	3
12	RXDB1	16
25	SG1	7
31	DTR1	20
32	DCD1	8
33	CTS1	5
34	SCTA1	15
35	SCTB1	14
36	TXDA1	2
37	TXDB1	13
— continued —		

**Table 54**  
**NTAK19BA cable pinout (IPE Module) (continued)**

Meridian 1	Signal	Port 2 pin
14	DSR2	6
15	RTS2	4
16	RXD2	3
38	DTR2	20
39	DCD2	8
40	CTS2	5
41	TXD2	2
42	SG2	7
		Port 3 pin
17	SCTEA3	24
18	SCTEB3	23
19	DSR3	6
20	RTS3	4
21	SCRA3	17
22	SCRB3	12
23	RXDA3	3
24	RXDB3	16
43	DTR3	20
44	DCD3	8
45	CTS3	5
46	SCTA3	15
47	SCTB3	14
48	TXDA3	2
49	TXDB3	13
50	SG3	7
— end —		

**SDI and ESDI/MSDL cabling (Option 11 IPE Module only)**

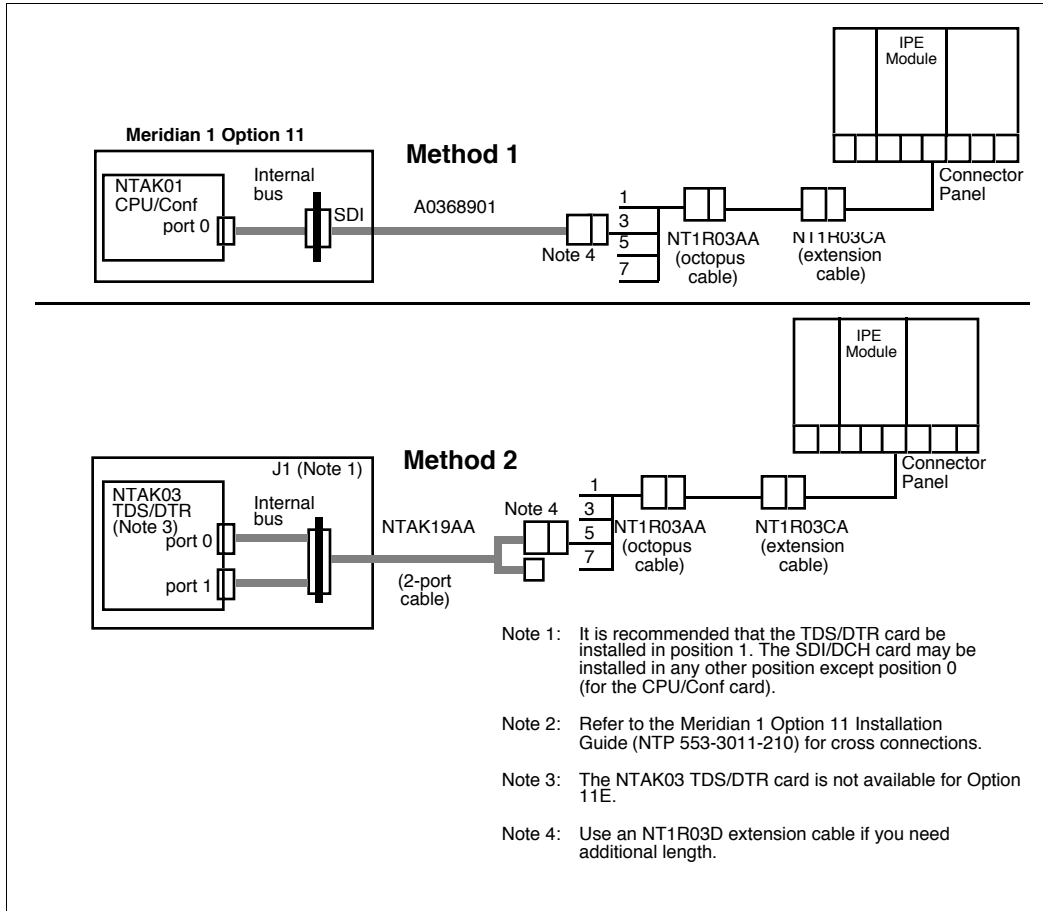
On an IPE Module Option 11 system, you can obtain one or two additional SDI or ESDI ports by adding an NTAK02 SDI/DCH card. The NTAK19BA cable plugs into the same port on the I/O panel as the card slot used for the SDI card. For example, if the SDI card is inserted in slot 5, the NTAK19BA cable plugs into port 5. Use a four-port SDI cable (NTAK19BA) with the NTAK02 SDI/DCH card. For more information about Option 11 SDI ports, refer to *Option 11 Technical Reference Guide—Book 1* (NTP 553-3011-100).

Figure 43 shows three methods of connecting an Option 11 system to port 3 (conshare) (SDI) or port 5 (AML) (ESDI) of the IPE Module cable NT1R03AA (which connects into the IPE Module connector panel through extension cable NT1R03CA). Refer to “External I/O cable pinouts” in this chapter for pinouts of these cables.

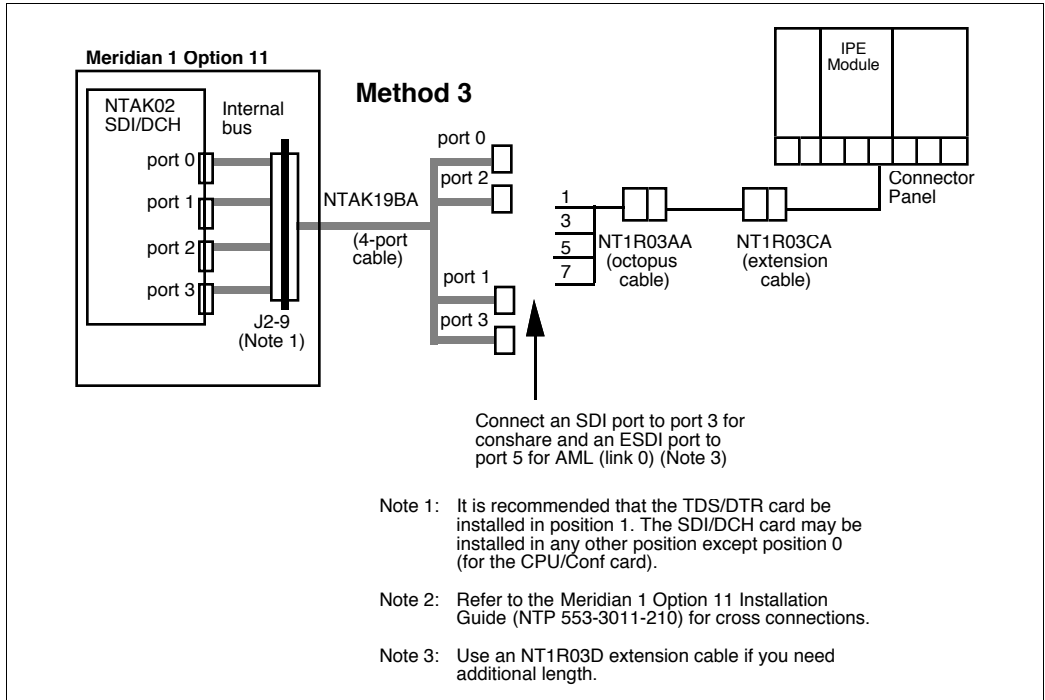
- The first method shows how to connect port 0 of the NTAK01 CPU/Conf card to IPE Module port 3 for conshare.
- The second method shows how to connect either port 0 or port 1 of the NTAK03 TDS/DTR card to IPE Module port 5 for AML. This method uses the NTAK19AA 2-port cable. Refer to “External I/O cable pinouts” in this chapter for a pinout of this cable.
- The third method shows how to connect any of ports 0–3 of the optional NTAK02 SDI/DCH card to an IPE Module port. Ports 0 and 2 of the NTAK02 SDI/DCH card can be configured as SDI ports and connected to IPE Module port 3 (conshare). Ports 1 and 3 of the NTAK02 SDI/DCH card can be configured as ESDI ports and connected to IPE Module port 5 (AML). This method uses the NTAK19BA 4-port cable. Refer to “External I/O cable pinouts” in this chapter for a pinout of this cable.

**Note:** To add length to the cabling, you may need to use a straight-through extension cable (NT1R03D) between the port on the octopus cable and the Meridian 1 port.

**Figure 43**  
**IPE Module Option 11 connections (Part 1)**



**Figure 43**  
**IPE Module Option 11 connections (Part 2)**

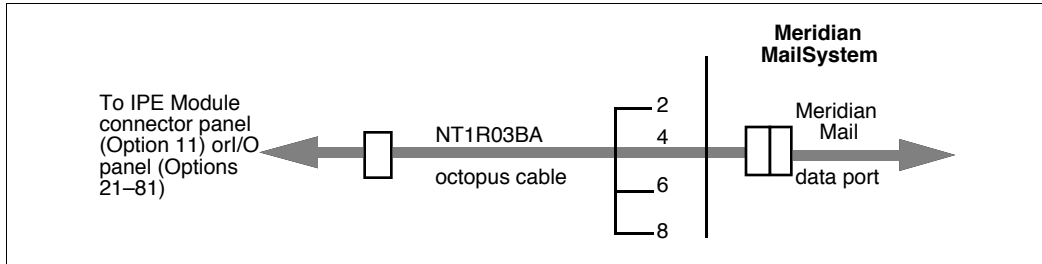


### Meridian Mail cabling (IPE Module)

The Meridian Link application can have voice-processing capability by connecting the IPE Module to a Meridian Mail system through a link called the Meridian Mail Link (MML).

The MML connects to the IPE Module at port 4. The MML connects to the Meridian Mail system at a data port of Meridian Mail via an NT1R03HF 25-pin male to a 25-pin male cable (10 ft.) with a null modem adapter. For a pinout of the NT1R03HF cable, refer to “External I/O cable pinouts” in this chapter.

**Figure 44**  
**Meridian Mail cabling (IPE Module)**



For more information on defining MML parameters, refer to Procedure 15: Changing Meridian Mail Link (link 2) parameters (Meridian Link only). For information on Meridian Mail, refer to Chapter 13, “Meridian Mail configuration.”

**ESDI/MSDL cabling (Options 21–81 IPE Module)**

As shown in Figure 45, port 5 of the NT1R03AA cable connects to the NT6D80 MSDL card through an NTND27AB cable and, if additional length is needed, through an NT1R03D extension cable. For pinouts of the NT1R03AA, NT8D82, NT1R03D, and NTND27 cables, refer to “External I/O cable pinouts” in this chapter. From the Meridian 1 I/O panel or the ESDI/MSDL on the Meridian 1, an NT7D58 cable connects to the IPE Module. Refer to Table 55.

As shown in Figures 45 and 46, port 5 of the NT1R03AA cable connects to the QPC513 ESDI card through an NT8D82 cable and, if additional length is needed, through an NT1R03D extension cable. The NT6D80 MSDL card connects to the Meridian 1 I/O panel using an NTND27 SCSI II cable. From the Meridian 1 I/O panel or the ESDI/MSDL on the Meridian 1, an NT7D58 cable connects to the IPE Module at

- J2 on the I/O subpanel
- ESDI Link port on the universal I/O panel
- card 2 conn 1 on the generic I/O panel

**SDI cabling (Options 21–81 IPE Module)**

As shown in Figures 45 and 46, port 3 of the NT1R03AA cable connects to SDI cards (except the NT8D41 SDI Paddle Board) through an NT8D82 cable, and if additional length is needed, through an NT1R03D cable. (See Table 42 for lengths and specific codes.) For pinouts of the NT1R03AA, NT8D82, and NT1R03D cables, refer to “External I/O cable pinouts” in this chapter. The NT6D80 MSDL card connects to the Meridian 1 I/O panel using an NTND27 SCSI II cable. From the Meridian 1 I/O panel, an NT7D58 cable connects to the IPE Module.

For more information about Option 11 SDI ports, refer to *Option 11 Technical Reference Guide—Book 1* (NTP 553-3011-100).

**SDI Paddle Board cabling (Options 21–81 IPE Module only)**

Port 3 of the NT1R03AA cable connects to the NT8D41 SDI Paddle Board through an NT8D93A cable and, if additional length is needed, through an NT1R03D extension cable. For pinout of the NT8D93A cable, refer to “External I/O cable pinouts” in this chapter.

As shown in Figures 45 and 46, the NT6D80 MSDL card connects to the Meridian 1 I/O panel using an NTND27 SCSI II cable. From the Meridian 1 I/O panel, an NT7D58 cable connects to the IPE Module.

The NT7D58 cable has 25-pin male connectors at both ends. Table 55 lists the pin assignments required for the cable.

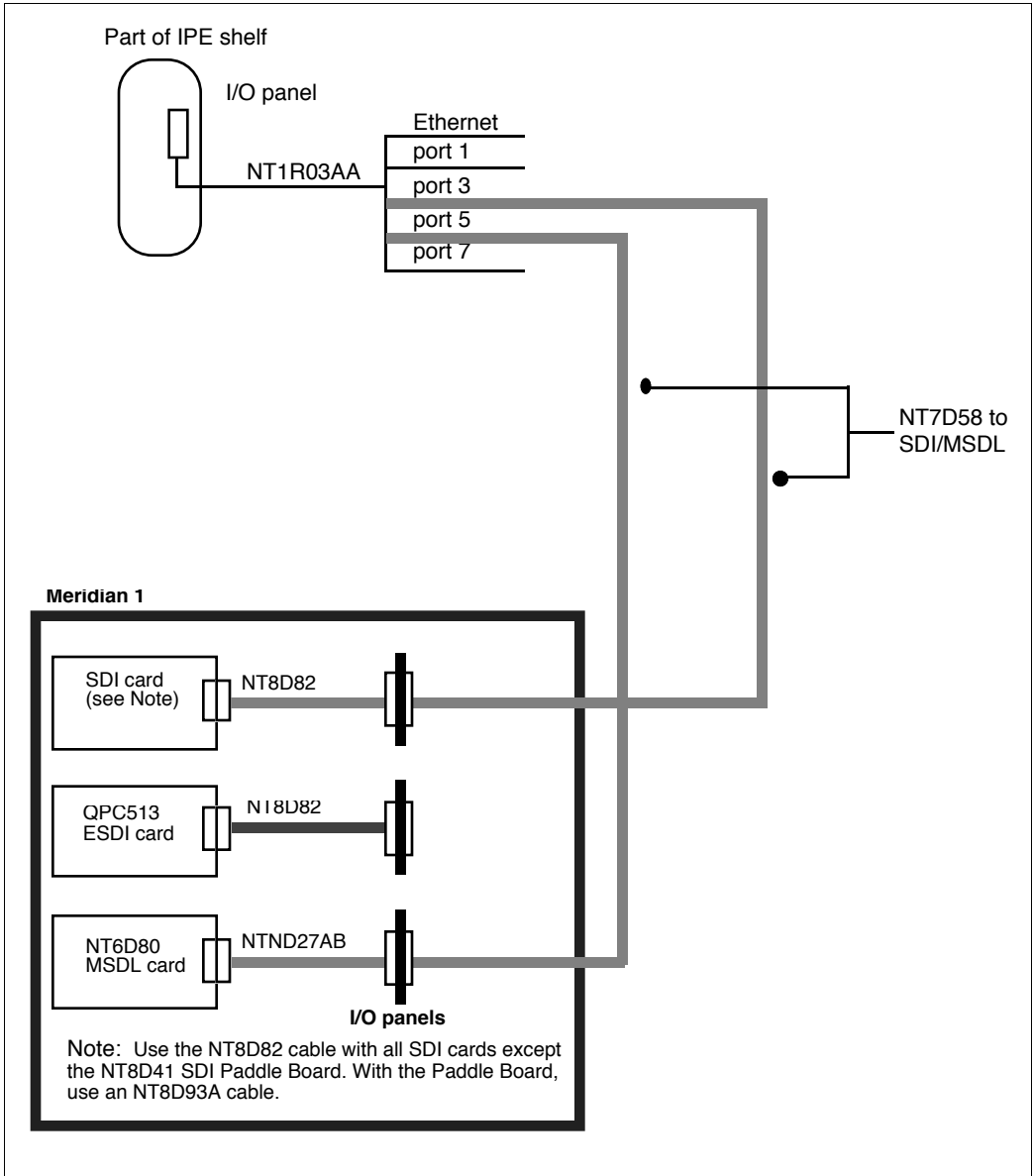
**Table 55**  
**NT7D58 cable pinout**

Meridian 1	Signal	AM (J2)
1	Shield	1
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	LRTN	7
8	DCD	8
15	STC	15
17	SCR	17
20	DTR	20
24	SCTE	24

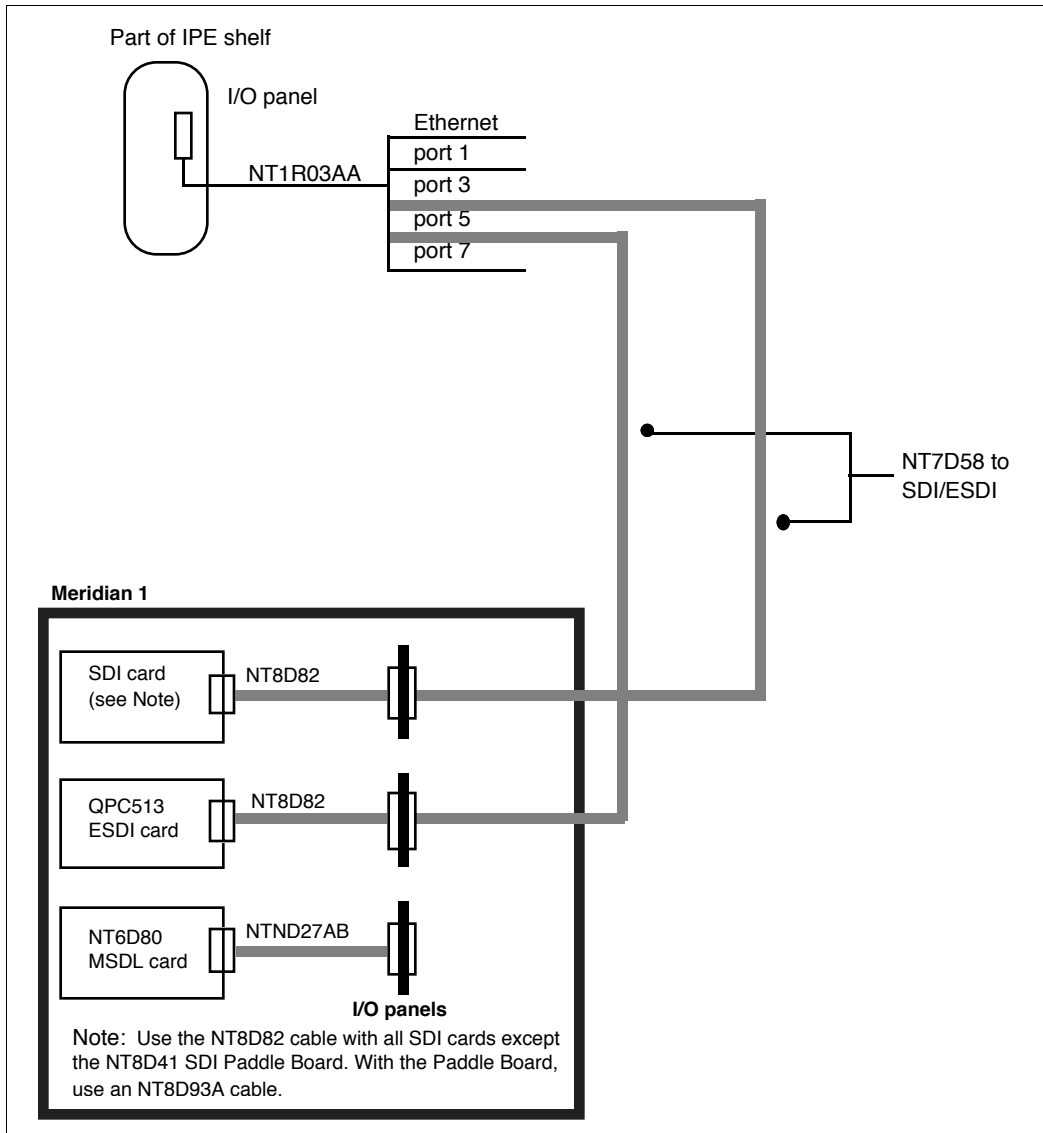
For more information about the NT8D41 SDI Paddle Board, refer to *NT8D4 SDI Paddle Board* (NTP 553-3001-181).



**Figure 45**  
**I/O cabling to Meridian 1 (SDI and MSDL) (Options 21–81 IPE Module)**



**Figure 46**  
**I/O cabling to Meridian 1 (SDI and ESDI) (Options 21–81 IPE Module)**



## Cabling the Option 11 IPE Module to external equipment

The following procedure to cable the Option 11 IPE Module to external equipment is only one of a series of procedures to install an IPE Module. The series is shown in Table 11 in Chapter 5, “Hardware installation overview.” Ensure that you have completed steps 1 through 4 in Table 11 before you start the following procedure.

### Cabling to external equipment

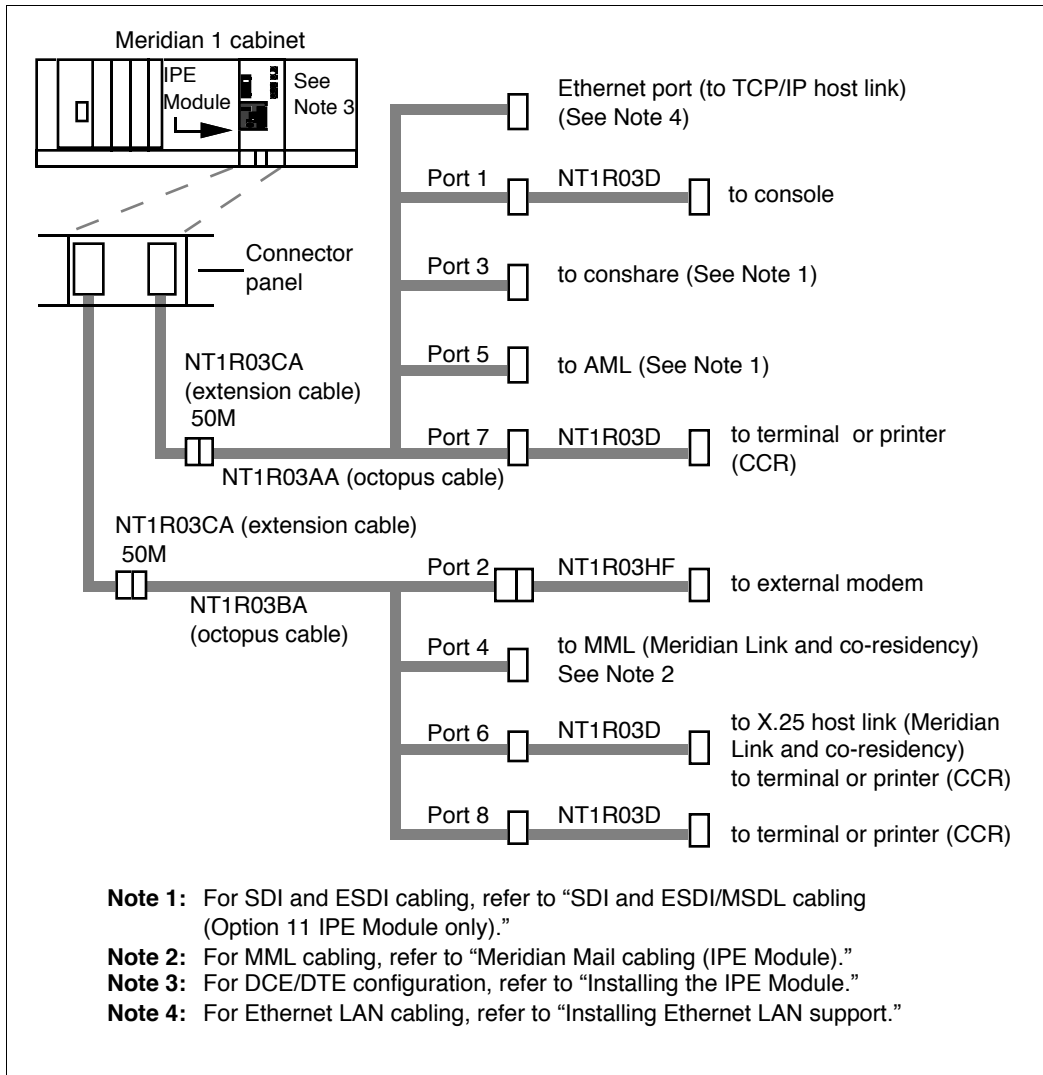
After installing the IPE Module in the main cabinet or expansion cabinet, connect the cables to external equipment.

Figure 47 shows the cabling from the Option 11 IPE Module to external equipment. The NT1R03AA and NT1R03BA octopus cables connect to the Option 11 cabinet’s connector panel through NT1R03CA extension cables. Octopus cable ports (called IPE Module ports) connect to external equipment as shown in Figure 47. NT1R03D extension cables attached to the IPE Module ports can provide additional length if needed.

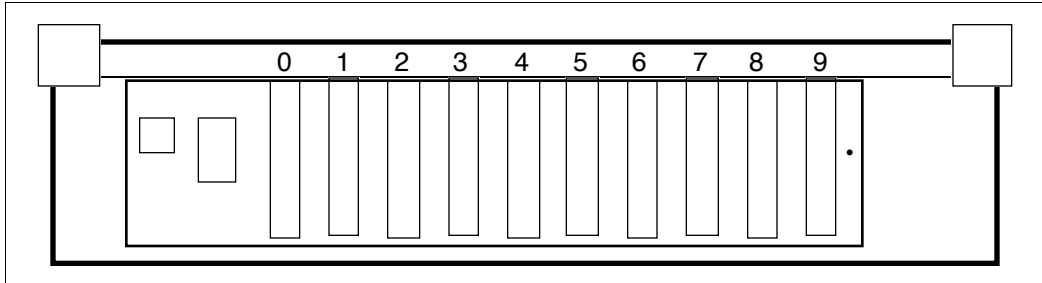
Figure 48 shows the connector panel for the main cabinet, which is at the bottom of the cabinet and recessed to the rear. The connector panel for the expansion cabinet is similar except for the connector port numbering.

For pinouts of the NT1R03AA, NT1R03BA, NT1R03CA, and NT1R03D cables, refer to “External I/O cable pinouts” in this chapter.

**Figure 47**  
**Option 11 system IPE Module connections**



**Figure 48**  
**Option 11 main cabinet connector panel**



- 1 Ensure that the power for the IPE Module is turned off.
- 2 Connect NT1R03CA extension cables to the NT1R03AA and NT1R03BA octopus cables using the 50-pin connectors. Using these cables allows the front panel of the Option 11 to be closed without interference from dangling cables.
- 3 Connect the NT1R03CA extension cable that is connected to the NT1R03AA octopus cable to the appropriate connector cable as shown in Tables 56 and 57. For example, if the IPE Module is located in slots 2, 3, and 4, connect the extension cable to connector J4.

**Table 56**  
**Option 11 IPE Module—NT1R03AA/NT1R03CA cable connections**  
**(main cabinet)**

<b>Slots occupied by the IPE Module</b>	<b>Connect NT1R03AA/NT1R03CA cables to connector port</b>
2, 3, 4	J4
3, 4, 5	J5
4, 5, 6	J6
5, 6, 7	J7
6, 7, 8	J8
7, 8, 9	J9

**Table 57**  
**Option 11 IPE Module—NT1R03AA/NT1R03CA cable connections**  
**(expansion cabinet)**

<b>Slots occupied by the IPE Module</b>	<b>Connect NT1R03AA/NT1R03CA cables to connector port</b>
11, 12, 13	J13
12, 13, 14	J14
13, 14, 15	J15
14, 15, 16	J16
15, 16, 17	J17
16, 17, 18	J18
17, 18, 19	J19
18, 19, 20	J20

- 4 Connect the NT1R03CA extension cable that is connected to the NT1R03BA octopus cable to the appropriate connector as shown in Tables 58 and 59. For example, if the IPE module is located in slots 2, 3, and 4, connect the extension cable to connector J2.

**Table 58**  
**Option 11 IPE Module—NTIR03BA/NT1R03CA cable connection**  
**(main cabinet)**

Slots occupied by the IPE Module	Connect NT1R03BA/NT1R03CA cables to connector port
2, 3, 4	J2
3, 4, 5	J3
4, 5, 6	J4
5, 6, 7	J5
6, 7, 8	J6
7, 8, 9	J7

**Table 59**  
**Option 11 IPE Module—NT1R03BA/NT1R03CA cable connections**  
**(expansion cabinet)**

Slots occupied by the IPE Module	Connect NT1R03BA/NT1R03CA cables to connector port
11, 12, 13	J11
12, 13, 14	J12
13, 14, 15	J13
14, 15, 16	J14
15, 16, 17	J15
16, 17, 18	J16
17, 18, 19	J17
18, 19, 20	J18

- 5 Connect the ports of octopus cable NT1R03AA to external equipment as described in Table 60 and shown in Figure 47. For example, connect port 1 of the NT1R03AA octopus cable to the console using a customer-supplied cable.

**Table 60**  
**Option 11 IPE Module external connections (NT1R03AA cable)**

NT1R03AA port	External equipment	External cable or reference
1	console	Customer-supplied cable. See Table 62 for pinout.
3	conshare	See "SDI and ESDI/MSDL cabling (Option 11 IPE Module only)."
5	AML	See "SDI and ESDI/MSDL cabling (Option 11 IPE Module only)."
7	terminal/printer	NT1R03D
Ethernet	Ethernet LAN	See "Installing Ethernet LAN support."

- 6 Connect the ports of cable NT1R03BA to external equipment using extension cables, as described in Table 61 and shown in Figure 47. For example, connect port 2 of the NT1R03BA cable to the external modem using extension cable NT1R03HF.



**Table 61**  
**Option 11 IPE Module external connections (NT1R03BA cable)**

NT1R03BA port	External equipment	External cable or reference
2	external modem	NT1R03HF (for pinout, see "External I/O cable pinouts.")
4	Meridian Mail Link	See "Meridian Mail cabling (IPE Module)."
6	X.25 Host Link	NT1R03D or customer-supplied cable. See Table 63 for pinout.
8	terminal/printer	NT1R03D

**Table 62**  
**Console cable pinout (NT1R03D)**

Meridian 1	Signal	IPE Module
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	LRTN	7
8	DCD	8
20	DTR	20
1	GND	1

**Table 63**  
**X.25 Host Link cable pinout**

<b>IPE Module</b>	<b>Signal</b>	<b>Host Connection</b>
2	TXD	RXD
3	RXD	TXD
4	RTS	CTS
5	CTS	RTS
6	DSR	DTR
7	GND	GND
8	DCD	+12v
15	TXCI	TRXC or open

*Note:* Return to Chapter 5, “Hardware installation overview” for the next procedure.

## Backplane cable rerouting for Options 21–81 CE/PE and IPE backplanes

In a standard configuration, an IPE Module can be placed in any four adjoining peripheral slots on an Options 21–81 CE/PE or IPE shelf. This is possible when the slots are fully cabled to accommodate 24 tip and ring pairs per slot. However, older CE/PE or IPE shelves (NT8D37 AA or DC vintage) do not have fully cabled backplanes. In those cases, you must reroute backplane cables inside the CE/PE or IPE shelf before installing the IPE Module.

To determine whether you have a fully cabled CE/PE or IPE shelf, check the back of the CE/PE backplane (NT8D11) or the IPE backplane (NT8D37). If the backplane has eight cables connected on each side, your backplane is fully cabled therefore you can install the IPE Module without rerouting cables. If there are any shrouds on the backplane left unattached, follow the appropriate procedure in this section to modify the CE/PE or IPE shelf.

In the standard configuration of the NT8D11 CE/PE backplane and NT8D37 IPE backplane for a software release prior to Meridian 1 X11 Release 18, some slots on the backplane are fully cabled to accommodate 24 tip and ring pairs (three cable connectors). Most of the backplane slots, however, accommodate 16 pairs (two cable connectors). By adding and reconfiguring backplane cabling in the backplane slots, you can ensure that each backplane slot can accommodate 24 pairs. Once you have finished the rerouting process, the CE/PE or IPE cabinet can support the IPE Module.



### CAUTION

#### Risk of system interruption

It is important to note that you should reroute only those cables connected to the segment of the backplane where the IPE Module is installed.

Backplane cables connect each connector port of an I/O panel with the appropriate slot on the backplane. For example, a backplane cable connects connector port A to a backplane slot. At the I/O panel, each backplane cable connects to a 50-pin connector. At the backplane end, each backplane cable

has three 20-pin connectors (only 16 pins are used) labelled 1, 2, and 3, and referred to as X-1, X-2, and X-3, in which X represents the I/O panel connector port. For example, the backplane cable connected to I/O panel connector port A has three connectors referred to as A-1, A-2, and A-3.

The location of the cable connectors on the backplane is designated by the slot number (L0 through L9 for NT8D11, L0 through L15 for NT8D37) and the shroud row (1, 2, 3). Using these designations, the slot positions in the first slot are referred to as L0-1, L0-2, and L0-3.



**CAUTION**

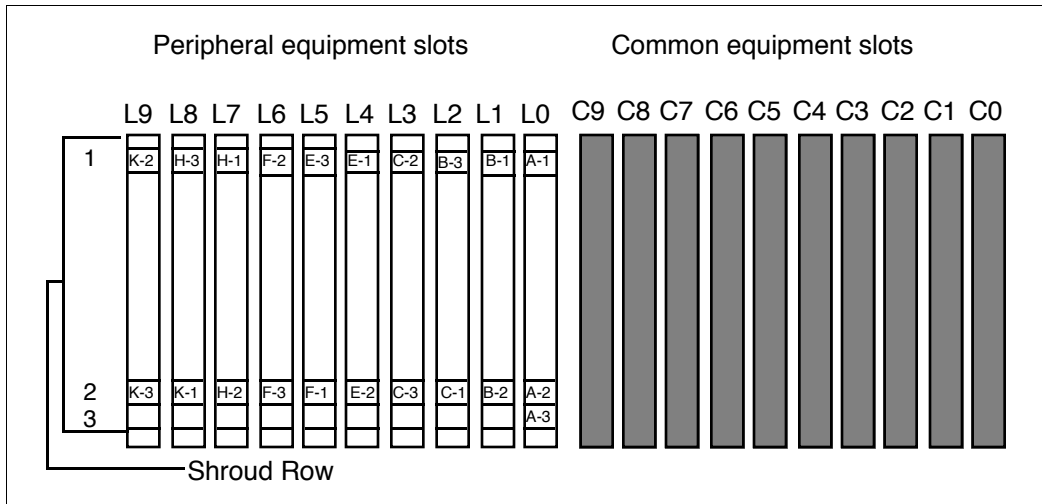
**Risk of equipment damage**

Wear an antistatic wrist strap when handling components to avoid equipment damage. The strap will also prevent a shock due to electrostatic energy buildup.

## Backplane cable rerouting for the NT8D11 CE/PE Module backplane

In the standard seven-cable configuration for the NT8D11 CE/PE backplane (Figure 49), cables from connector ports D, G, and L are not used. Those cables are used in the ten-cable fully expanded configuration.

**Figure 49**  
NT8D11 backplane cable designations (standard configuration)



**Note:** The first PE slot is already fully cabled for 24 pairs, so no change is required for that slot.

Table 64 lists cable connections *before* cable expansion. Figure 49 shows the backplane slots *before* cable expansion.

**Table 64**  
**NT8D11 cable connections (standard configuration)**

I/O panel connector port	Backplane cable connector	Backplane slot position
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L2-1
C	C-1	L2-2
	C-2	L3-1
	C-3	L3-2
E	E-1	L4-1
	E-2	L4-2
	E-3	L5-1
F	F-1	L5-2
	F-2	L6-1
	F-3	L6-2
H	H-1	L7-1
	H-2	L7-2
	H-3	L8-1
K	K-1	L8-2
	K-2	L9-1
	K-3	L9-2
<b>Note:</b> Connector ports D, G, and L are not used in this configuration.		

Cabling for the first four PE slots can be expanded using one NT8D81AA cable/filter assembly. Cabling for all of the PE slots can be expanded using three NT8D81AA cable/filter assemblies.

If you do not have additional NT8D81AA cable/filter assemblies available, you can reroute the existing cables to accommodate the Meridian Link/CCR IPE Module in certain PE slots. For more information on this, refer to “NT8D11 backplane cabling rerouting—to accommodate the IPE Module in PE slots 0–3” later in this section.

### **NT8D11 backplane cable expansion—first four PE slots only**

With the cables located as shown in Table 64:

- 1 Leave cable A in slot position L0.
- 2 Move cable end B-3 from slot position L2-1 to slot position L1-3.
- 3 Remove cable C from the backplane and connect cable ends C-1, C-2, and C-3 to slot positions L2-1, L2-2, and L2-3.
- 4 Add cable D to the I/O panel by connecting cable ends D-1, D-2, and D-3 to slot positions L3-1, L3-2, and L3-3.

Cables E, G, H, and K remain the same. Cable positions G and L are open for further expansion.

Slots 0–3 are now ready to receive an IPE Module.

### **NT8D11 backplane cable expansion—all PE slots**

With the cables located as shown in Table 64:

- 1 Leave cable A in slot position L0.
- 2 Move cable end B-3 from slot position L2-1 to slot position L1-3.
- 3 Remove cable C from the backplane and connect cable ends C-1, C-2, and C-3 to slot positions L2-1, L2-2, and L2-3.
- 4 Add cable D to the I/O panel by connecting cable ends D-1, D-2, and D-3 to slot positions L3-1, L3-2, and L3-3.
- 5 Move cable end E-3 from slot position L5-1 to slot position L4-3.
- 6 Remove cable F from the backplane and connect cable ends F-1, F-2, and F-3 to slot positions L5-1, L5-2, and L5-3.
- 7 Add cable G to the I/O panel by connecting cable ends G-1, G-2, and G-3 to slot positions L6-1, L6-2, and L6-3.

- 8 Move cable end H-3 from slot position L8-1 to slot position L7-3.
- 9 Remove cable K from the backplane and connect cable ends K-1, K-2, and K-3 to slot positions L8-1, L8-2, and L8-3.
- 10 Add cable L to the I/O panel by connecting cable ends L-1, L-2, and L-3 to slot positions L9-1, L9-2, and L9-3.

The backplane cabling should now be as shown in Table 65 and Figure 50. All slots are now ready to receive an IPE Module.

Table 65 lists cable connections for a fully expanded configuration. Figure 50 shows the backplane slots in a fully expanded configuration.

**Table 65**  
**NT8D11 cable connections (fully expanded configuration)**

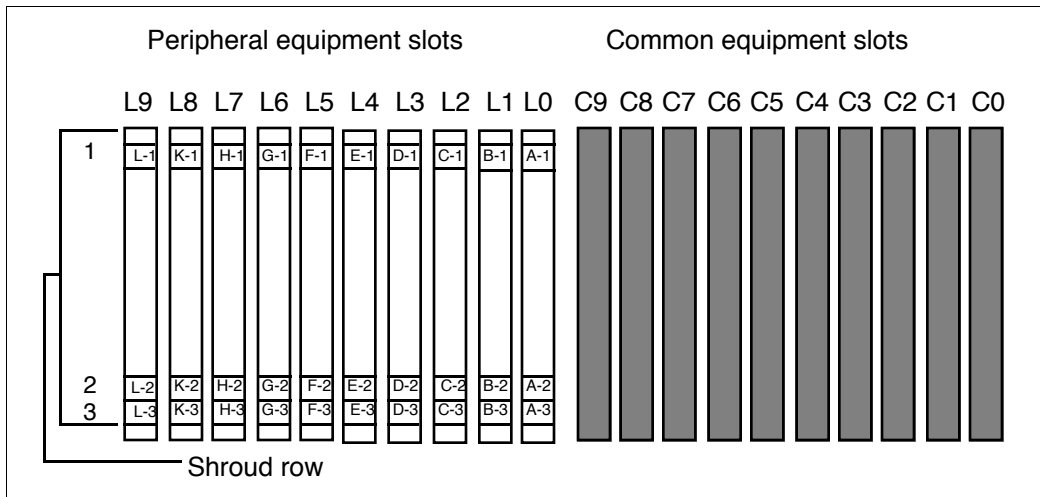
I/O panel connector port	Backplane cable connector	Backplane slot position
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L1-3
C	C-1	L2-1
	C-2	L2-2
	C-3	L2-3
D (new cable)	D-1	L3-1
	D-2	L3-2
	D-3	L3-3
E	E-1	L4-1
	E-2	L4-2
	E-3	L4-3
F	F-1	L5-1
	F-2	L5-2
	F-3	L5-3
— continued —		



**Table 65**  
**NT8D11 cable connections (fully expanded configuration) (continued)**

I/O panel connector port	Backplane cable connector	Backplane slot position
G (new cable)	G-1	L6-1
	G-2	L6-2
	G-3	L6-3
H	H-1	L7-1
	H-2	L7-2
	H-3	L7-3
K	K-1	L8-1
	K-2	L8-2
	K-3	L8-3
L (new cable)	L-1	L9-1
	L-2	L9-2
	L-3	L9-3
— end —		

**Figure 50**  
**NT8D11 backplane cable designations (fully expanded configuration)**



**NT8D11 backplane cable rerouting—to accommodate the IPE Module in PE slots 0–3**

With the cables located as shown in Table 64, use the following procedure to reroute the backplane cables. Note that an IPE Module located in slots 0–3 uses I/O connector ports A and D.

- 1 Leave cable A in slot position L0.
- 2 Remove cable C from the backplane and connect cable ends C-1, C-2, and C-3 to slot positions L3-1, L3-2, and L3-3.
- 3 Move the C connector on the I/O panel to position D. Now the cable designation is changed from C to D.



**CAUTION**

**Risk of hardware damage**

With this cable rerouting, the IPE Module can be used only in PE slots 0–3. Also, when the IPE Module is not in PE slots 0–3, PE slot 2 should not be used at all.

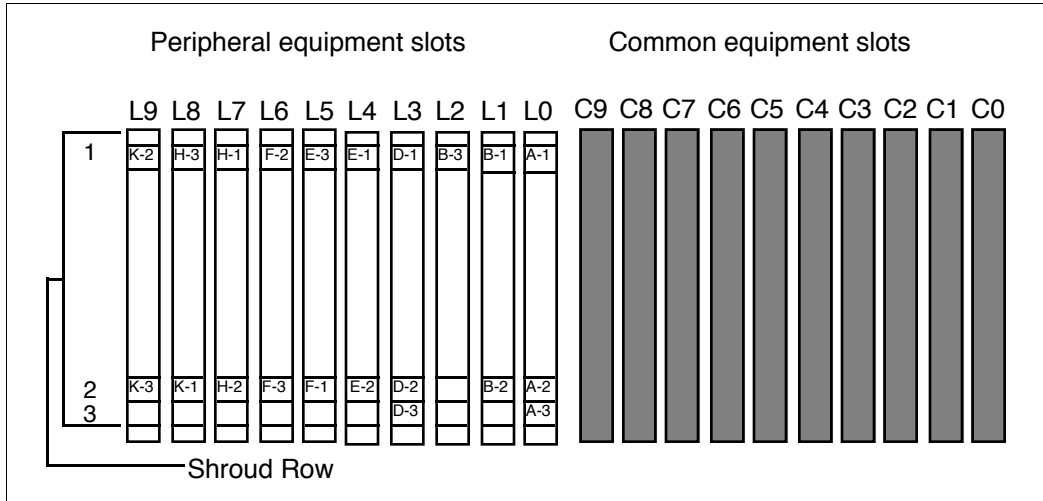
Table 66 lists cable connections for a rerouted IPE shelf. Figure 51 shows the backplane slots in a rerouted IPE shelf.

**Table 66**  
**NT8D11 cable connections (rerouted for slots 0–3)**

I/O panel connector port	Backplane cable connector	Backplane slot position
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L2-1
D	D-1	L3-1
	D-2	L3-2
	D-3	L3-3
E	E-1	L4-1
	E-2	L4-2
	E-3	L5-1
F	F-1	L5-2
	F-2	L6-1
	F-3	L6-2
H	H-1	L7-1
	H-2	L7-2
	H-3	L8-1
K	K-1	L8-2
	K-2	L9-1
	K-3	L9-2

**Note:** Connector ports C, G, and L are not used in this configuration.

**Figure 51**  
**NT8D11 backplane cable designations (rerouted for slots 0–3)**



## Backplane cable rerouting for NT8D37 IPE Module

In the standard 12-cable configuration for the backplane in the NT8D37 IPE Module, cables D, H, N, and U are not used. Those cables are used in the 16-cable fully expanded configuration.

**Note:** Backplane slots 0, 4, 8, and 12 (for cables A, E, K, and R) are already fully cabled for 24 pairs, so no change is required for those slots.

Table 67 lists cable connections *before* cable expansion. Figure 52 shows the backplane slots *before* cable expansion.

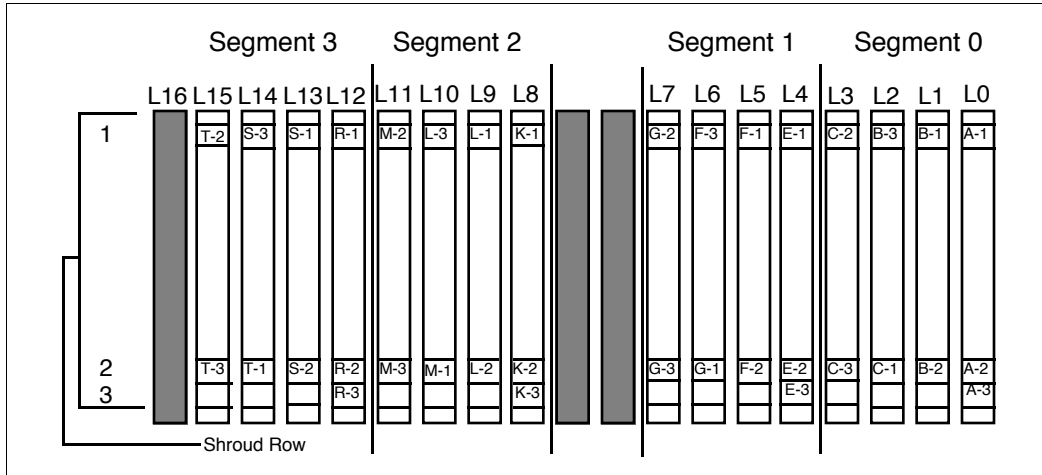
**Table 67**  
**NT8D37 cable connections (standard configuration)**

I/O panel connector port	Backplane cable connector	Backplane slot position
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L2-1
C	C-1	L2-2
	C-2	L3-1
	C-3	L3-2
E	E-1	L4-1
	E-2	L4-2
	E-3	L4-3
F	F-1	L5-1
	F-2	L5-2
	F-3	L6-1
—continued—		

**Table 67**  
**NT8D37 cable connections (standard configuration) (continued)**

I/O panel connector port	Backplane cable connector	Backplane slot position
G	H-1	L6-2
	H-2	L7-1
	H-3	L7-2
K	K-1	L8-1
	K-2	L8-2
	K-3	L8-3
L	L--1	L9-1
	L-2	L9-2
	L-3	L10-1
M	M-1	L10-2
	M-2	L11-1
	M-3	L11-2
R	R-1	L12-1
	R-2	L12-2
	R-3	L12-3
S	S-1	L13-1
	S-2	L13-2
	S-3	L14-1
T	T-1	L14-2
	T-2	L15-1
	T-3	L15-2
<b>Note:</b> Connector ports D, H, N, and V are not used in this configuration.		
— end —		

**Figure 52**  
**NT8D37 backplane cable designations (standard configuration)**



Cabling for each segment can be expanded using one NT8D81AA cable/filter assembly. Cabling for the entire backplane can be expanded using four NT8D81AA cable/filter assemblies.

If you do not have additional NT8D81AA cable/filter assemblies available, you can reroute the existing cables to accommodate the Meridian Link/CCR IPE Module in specific PE slots. For more information on this, refer to the NT8D37 backplane cable rerouting procedures (such as “NT8D37 backplane cable rerouting for segment 0—to accommodate the IPE Module in PE slots 0–3”) later in this section.

### **NT8D37 backplane cable expansion—segment 0**

With the cables located as shown in Table 67:

- 1 Leave cable A as is in slot position L0.
- 2 Move cable end B-3 from slot position L2-1 to slot position L1-3.
- 3 Remove cable C from the backplane and connect cable ends C-1, C-2 and C-3 to slot positions L2-1, L2-2, and L2-3.
- 4 Add cable D to the I/O panel by connecting cable ends D-1, D-2, and D-3 to slot positions L3-1, L3-2, and L3-3.

The IPE shelf is now ready to receive an IPE Module in slots 0–3.

### **NT8D37 backplane cable expansion—segment 1**

- 1 Leave cable E in slot position L4.
- 2 Move cable end F-3 from slot position L6-1 to slot position L5-3.
- 3 Remove cable G from the backplane and connect cable ends G-1, G-2, and G-3 to slot positions L6-1, L6-2, and L6-3.
- 4 Add cable H to the I/O panel by connecting cable ends H-1, H-2, and H-3 to slot positions L7-1, L7-2, and L7-3.

The IPE shelf is now ready to receive an IPE Module in slots 4–7.

### **NT8D37 backplane cable expansion—segment 2**

- 1 Leave cable K in slot position L8.
- 2 Move cable end L-3 from slot position L10-1 to slot position L9-3.
- 3 Remove cable M from the backplane and connect cable ends M-1, M-2, and M-3 to slot positions L10-1, L10-2, and L10-3.
- 4 Add cable N to the I/O panel by connecting cable ends N-1, N-2, and N-3 to slot positions L11-1, L11-2, and L11-3.

The IPE shelf is now ready to receive an IPE Module in slots 8–11.



### **NT8D37 backplane cable expansion—segment 3**

- 1** Leave cable R in slot position L12.
- 2** Move cable end S-3 from slot position L14-1 to slot position L13-3.
- 3** Remove cable T from the backplane and connect cable ends T-1, T-2, and T-3 to slot positions L14-1, L14-2, and L14-3.
- 4** Add cable U to the I/O panel by connecting cable ends U-1, U-2, and U-3 to slot positions L15-1, L15-2, L15-3.

The IPE shelf is now ready to receive an IPE Module in slots 12–15.

Table 68 lists cable connections for a fully expanded configuration. Figure 53 shows the backplane slots in a fully expanded configuration.

**Table 68**  
**NT8D37 cable connections (fully expanded configuration)**

I/O panel connector port	Backplane cable connector	Backplane slot location
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L1-3
C	C-1	L2-1
	C-2	L2-2
	C-3	L2-3
D (new cable)	D-1	L3-1
	D-2	L3-2
	D-3	L3-3
E	E-1	L4-1
	E-2	L4-2
	E-3	L4-3
F	F-1	L5-1
	F-2	L5-2
	F-3	L5-3
G	G-1	L6-1
	G-2	L6-2
	G-3	L6-3
— continued —		

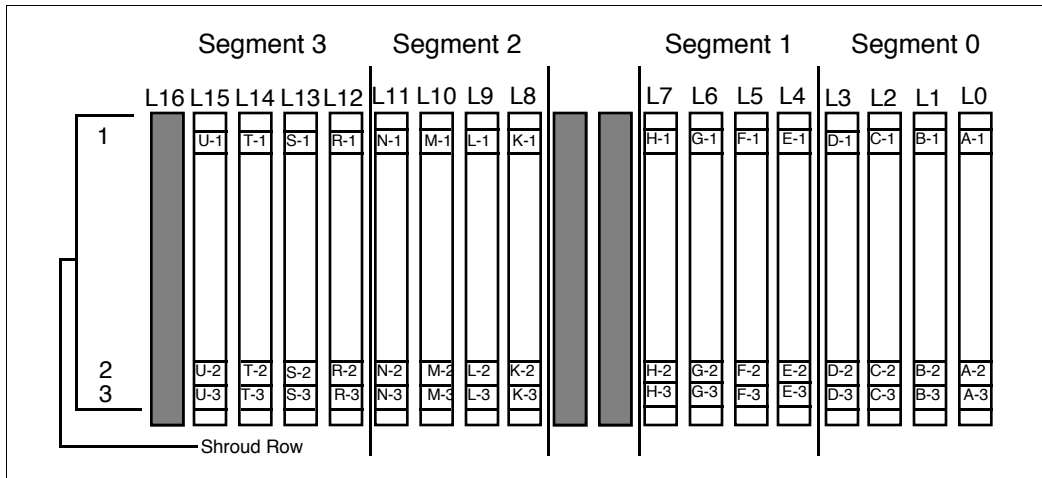
**Table 68**  
**NT8D37 cable connections (fully expanded configuration) (continued)**

<b>I/O panel connector port</b>	<b>Backplane cable connector</b>	<b>Backplane slot location</b>
H (new cable)	H-1	L7-1
	H-2	L7-2
	H-3	L7-3
K	K-1	L8-1
	K-2	L8-2
	K-3	L8-3
L	L--1	L9-1
	L-2	L9-2
	L-3	L9-3
M	M-1	L10-1
	M-2	L10-2
	M-3	L10-3
N (new cable)	N-1	L11-1
	N-2	L11-2
	N-3	L11-3
R	R-1	L12-1
	R-2	L12-2
	R-3	L12-3
S	S-1	L13-1
	S-2	L13-2
	S-3	L13-3
<b>— continued —</b>		

**Table 68**  
**NT8D37 cable connections (fully expanded configuration) (continued)**

I/O panel connector port	Backplane cable connector	Backplane slot position
T	T-1	L14-1
	T-2	L14-2
	T-3	L14-3
U (new cable)	U-1	L15-1
	U-2	L15-2
	U-3	L15-3
— end —		

**Figure 53**  
**NT8D37 backplane cable designations (fully expanded configuration)**



### **NT8D37 backplane cable rerouting for segment 0—to accommodate the IPE Module in PE slots 0–3**

With the cables located as shown in Table 67:

- 1 Leave cable A in slot position L0.
- 2 Remove cable C from the backplane and connect cable ends C-1, C-2, and C-3 to slot position L3-1, L3-2, and L3-3.
- 3 Move the C connector on the I/O panel to position D. Now the cable designation is changed from C to D.



#### **CAUTION**

##### **Risk of hardware damage**

With this cable rerouting, the IPE Module can be used only in PE slots 0–3. Also, when the IPE Module is not in PE slots 0–3, PE slot 2 should not be used at all.

**Note:** Reroute the cable only in the segment where the IPE Module is going to be installed. Do not reroute the cable in other segments.

Table 69 lists cable connections for an IPE shelf with segment 0 rerouted. Figure 54 shows the backplane slots in that IPE shelf.

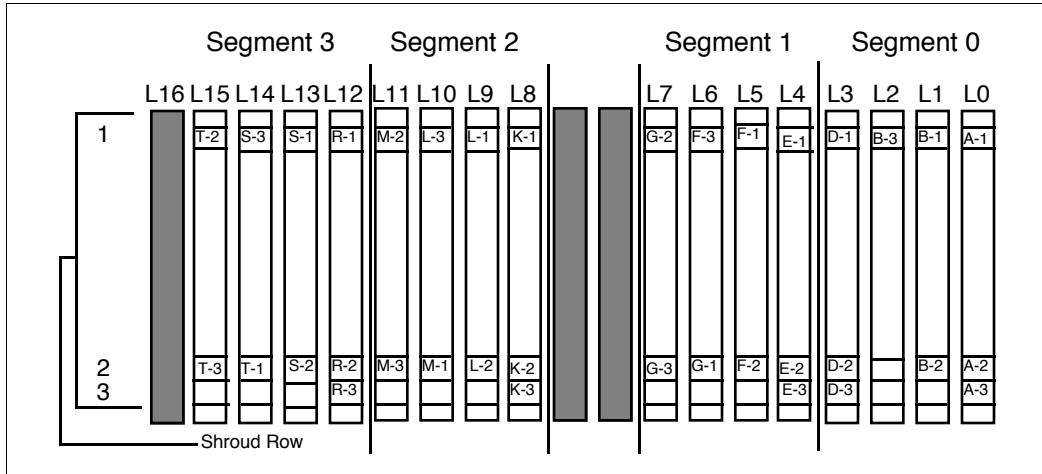
**Table 69**  
**NT8D37 cable connections (segment 0 has been rerouted)**

I/O panel connector port	Backplane cable connector	Backplane slot position
A	A-1	L0-1
	A-2	L0-2
	A-3	L0-3
B	B-1	L1-1
	B-2	L1-2
	B-3	L2-1
D	D-1	L3-1
	D-2	L3-2
	D-3	L3-3
E	E-1	L4-1
	E-2	L4-2
	E-3	L4-3
F	F-1	L5-1
	F-2	L5-2
	F-3	L6-1
G	G-1	L6-2
	G-2	L7-1
	G-3	L7-2
K	K-1	L8-1
	K-2	L8-2
	K-3	L8-3
—continued—		

**Table 69**  
**NT8D37 cable connections (segment 0 has been rerouted) (continued)**

I/O panel connector port	Backplane cable connector	Backplane slot location
L	L-1	L9-1
	L-2	L9-2
	L-3	L10-1
M	M-1	L10-2
	M-2	L11-1
	M-3	L11-2
R	R-1	L12-1
	R-2	L12-2
	R-3	L12-3
S	S-1	L13-1
	S-2	L13-2
	S-3	L14-1
T	T-1	L14-2
	T-2	L15-1
	T-3	L15-2
<b>Note:</b> Connector ports C, H, N, and U are not used in this configuration.		
— end —		

**Figure 54**  
**NT8D11 backplane cable designations (segment 0 has been rerouted)**



**NT8D37 backplane cable rerouting for segment 1—to accommodate the IPE Module in PE slots 4–7**

- 1 Leave cable E as is in slot position L4.
- 2 Remove cable G from the backplane and connect cable ends G-1, G-2, and G-3 to slot positions L7-1, L7-2, and L7-3.
- 3 Move the G connector on the I/O panel to position H. Now the cable designation is changed from G to H.



**CAUTION**

**Risk of hardware damage**

With this cable rerouting, the IPE Module can only be used in PE slots 4–7. Also, when the IPE Module is not in PE slots 4–7, PE slot 6 should not be used at all.

*Note:* Reroute the cable only in the segment where the IPE Module is going to be installed. Do not reroute the cable in other segments.



### **NT8D37 backplane cable rerouting for segment 2—to accommodate the IPE Module in PE slots 8–11**

With the cables located as shown in Table 67:

- 1 Leave cable K as is in slot position L8.
- 2 Remove cable M from the backplane and connect cable ends M-1, M-2, and M-3 to slot positions L11-1, L11-2, and L11-3.
- 3 Move the M connector on the I/O panel to position N. Now the cable designation is changed from M to N.



#### **CAUTION**

##### **Risk of hardware damage**

With this rerouting, the IPE Module can be used only in PE slots 8–11. Also, when the IPE Module is not in PE slots 8–11, PE slot 10 should not be used at all.

**Note:** Reroute the cable only in the segment where the IPE Module is going to be installed. Do not reroute the cable in other segments.

**NT8D37 backplane cable rerouting for segment 3—to accommodate the IPE Module in PE slots 12–15**

With the cables located as shown in Table 67:

- 1 Leave cable R as is in slot position L12.
- 2 Remove cable T from the backplane and connect cable ends T-1, T-2, and T-3 to slot positions L15-1, L15-2, and L15-3.
- 3 Move the T connector on the I/O panel to position U. Now the cable designation is changed from T to U.



**CAUTION**

**Risk of hardware damage**

With this cable rerouting, the IPE Module can be used only in PE slots 12–15. Also, when the IPE Module is not in PE slots 12–15, PE slot 14 should not be used at all.

*Note:* Reroute the cable only in the segment where the IPE Module is going to be installed. Do not reroute the cable in other segments.

## Cabling the Options 21–81 IPE Module to external equipment

The following procedure to cable an Options 21–81 IPE Module to external equipment is only one of a series of procedures to install an IPE Module. The series is shown in Table 11 in Chapter 5, “Hardware installation overview.” Ensure that you have completed steps 1 through 4 in Table 11 before you start the following procedure.

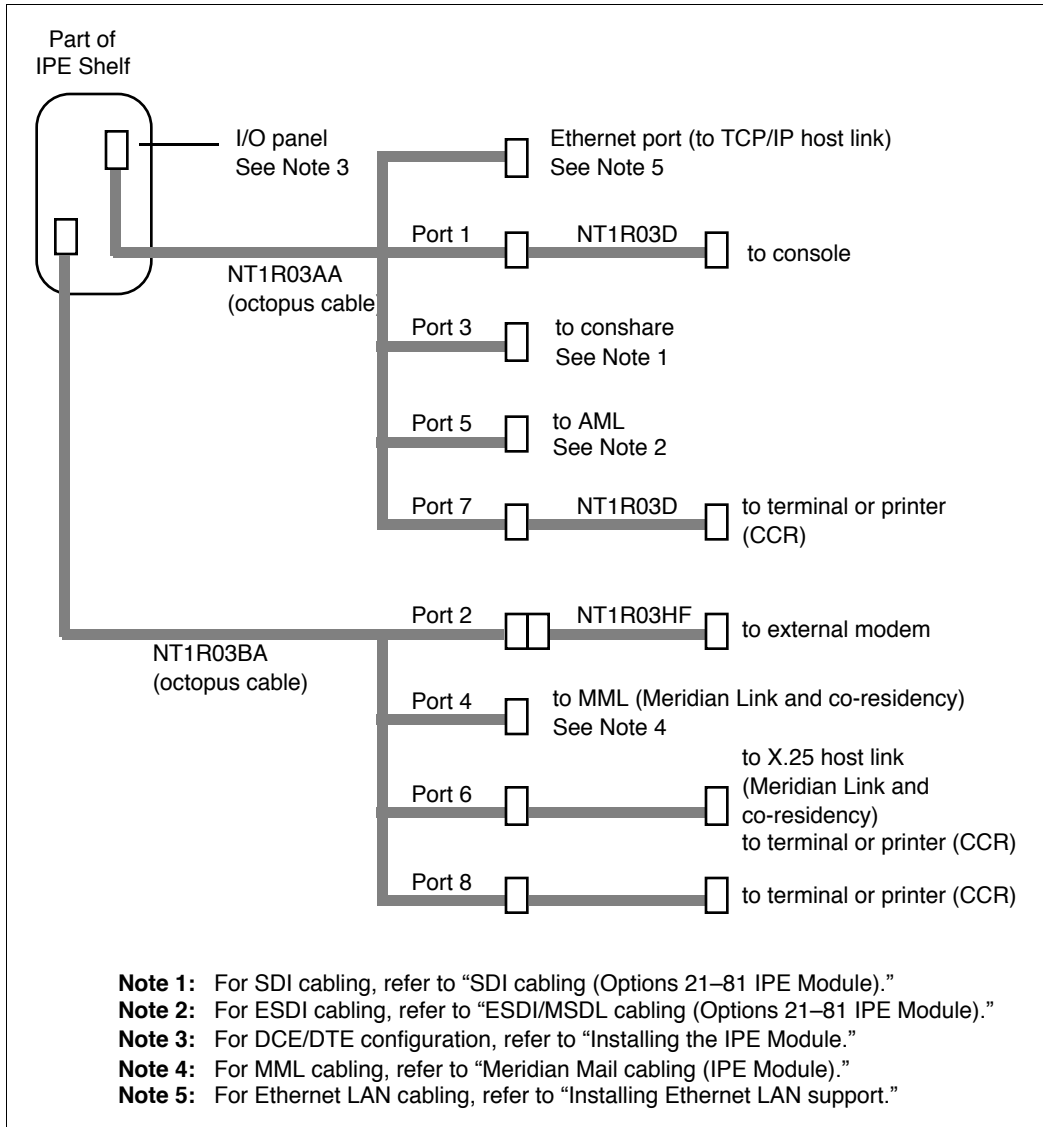
After installing the IPE Module in the IPE shelf, connect the cables to external equipment.

Figure 55 shows the cabling from the Options 21–81 IPE Module to external equipment. The NT1R03AA and NT1R03BA octopus cables connect to the IPE shelf I/O panels (shown in Figure 55). Octopus cable ports (called IPE Module ports) connect to external equipment. The NT1R03D extension cable attached to the IPE Module ports can provide additional length if needed.

IPE Module connections are made to the IPE shelf I/O panels. Figure 56 illustrates the I/O panels.

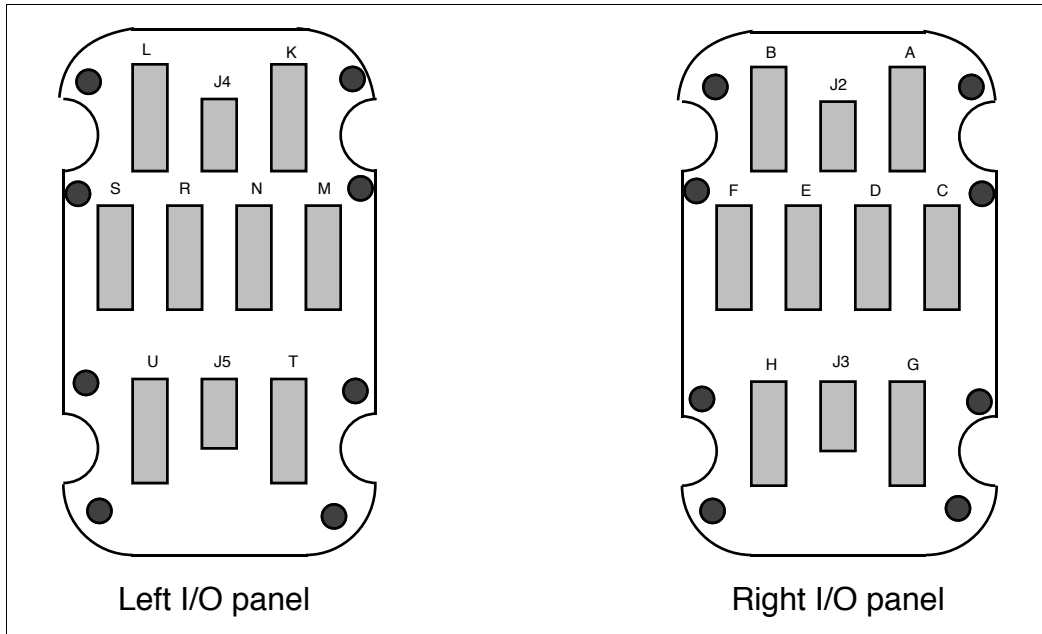
For pinouts for the NT1R03AA, NT1R03BA, and NT1R03D cables, refer to “External I/O cable pinouts” in this chapter.

**Figure 55**  
**Options 21–81 system IPE Module connections**



Use the following procedure to cable to external equipment.

**Figure 56**  
**IPE shelf I/O panels (Options 21–81)**



- 1 Ensure that the power for the IPE Module is turned off.
- 2 Connect the NT1R03AA and NT1R03BA octopus cables to the I/O panel; the specific connectors depend on the location of the IPE Module. Tables 70 and 71 list the connectors to use for various locations of the IPE Module. For example, if the IPE Module is in slots 0 through 3, connect the NT1R03AA cable to connector D, and the NT1R03BA cable to connector A.

**Table 70**  
**Option 21 CE/PE cabinet connectors**

Slots occupied by the IPE Module	Connect NT1R03AA to connector port	Connect NT1R03BA to connector port
0–3	D	A
1–4	E	B
2–5	F	C
3–6	G	D
4–7	H	E
5–8	K	F
6–9	L	G

**Table 71**  
**Options 51–81 IPE cabinet connectors**

Slots occupied by the IPE Module	Connect NT1R03AA to connector port	Connect NT1R03BA to connector port
0–3	D	A
1–4	E	B
2–5	F	C
3–6	G	D
4–7	H	E
8–11	N	K
9–12	R	L
10–13	S	M
11–14	T	N
12–15	U	R

- 3 Connect the ports of cable NT1R03AA to external equipment, as described in Table 72 and shown in Figure 55. For example, connect port 1 of the NT1R03AA cable to the console, using a customer-supplied cable.

**Table 72**  
**Options 21–81 IPE Module external connections (NT1R03AA cable)**

NT1R03AA port	External equipment	External cable or reference
1	console	NT1R03D or customer-supplied cable. See Table 74 for pinout.
3	conshare	See “SDI cabling (Options 21–81 IPE Module).”
5	AML	See “ESDI/MSDL cabling (Options 21–81 IPE Module).”
7	terminal	NT1R03D
Ethernet	Ethernet LAN	See “Installing Ethernet LAN support.”

- 4 Connect the ports of cable NT1R03BA to external equipment, as described in Table 73 and shown in Figure 55. For example, connect port 2 of the NT1R03BA cable to the external modem, using extension cable NT1R03HF.

**Table 73**  
**Options 21–81 IPE Module external connections (NT1R03BA cable)**

<b>NT1R03BA port</b>	<b>External equipment</b>	<b>External cable or reference</b>
2	external modem	NT1R03HF
4	Meridian Mail Link	See “Meridian Mail cabling (IPE Module).”
6	X.25 Host Link	NT1R03D or customer-supplied cable. See Table 75 for pinouts.
8	terminal	NT1R03D

**Table 74**  
**Console cable pinout (NT1R03D)**

<b>Meridian 1</b>	<b>Signal</b>	<b>IPE Module</b>
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	LRTN	7
8	DCD	8
20	DTR	20
1	GND	1



**Table 75**  
**X.25 Host Link cable pinout**

<b>IPE Module</b>	<b>Signal</b>	<b>Host Connection</b>
2	TXD	RXD
3	RXD	TXD
4	RTS	CTS
5	CTS	RTS
6	DSR	DTR
7	GND	GND
8	DCD	+12 V
15	TXCI	TRXC or open

*Note:* Return to Chapter 5, “Hardware installation overview” for the next procedure.

## Application Module cabling

Two types of cables interconnect Application Module components. These include

- power harness cables
- I/O cables



### **CAUTION**

#### **Risk of system interruption**

Be careful when running cables in the AEM. Ensure that cables are not looped or kinked. Try to route cables parallel to each other as much as possible. By doing so, you can avoid consequent hardware failures.

## Power cables

Power to the AEM is fed to the MPDU. Power harnesses conduct power from the MPDU to the power supply in the Application Module. To cable an Application Module to the proper circuit breaker on the MPDU, connect the input power harness (NT7D55AC or NT7D55AD) as follows:

- If the Application Module is on the left-hand side of the AEM (next to the MPDU), connect the power harness to connector P3 on the back of the MPDU.
- If the Application Module is on the right-hand side of the AEM, connect the power harness to connector P4 on the back of the MPDU.

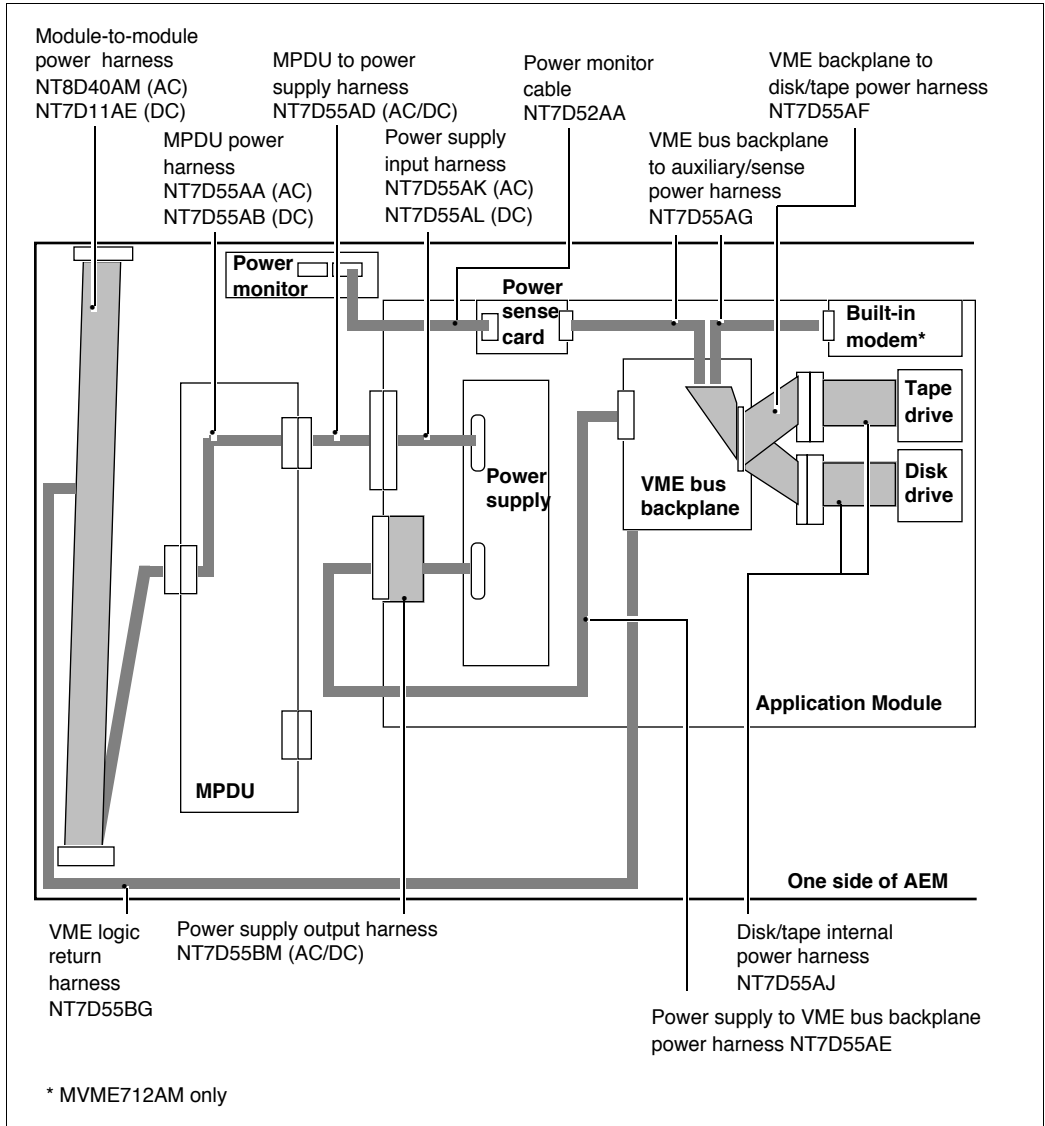
If the Application Module is installed in the AEM before it is shipped, the power harness to the MPDU is already connected. Check to make sure the connection has remained firmly mated during shipping and installation.

Table 76 lists Application Module power harnesses and their applications. Figure 57 is a power harness wiring diagram for the Application Module.

**Table 76**  
**Power harness cables (Application Module)**

Part number	Application
NT7D52AA (A0372656)	Power monitor cable: carries signals from the power sense card to the power monitor
NT7D55AA (AC) (A0372722) NT7D55AB (DC) (A0372723)	MPDU power harness (located inside the MPDU): connects the circuit breakers to the output connectors
NT7D55AD (AC/DC) (A0372725)	MPDU to power supply harness: connects the MPDU to the Application Module
NT7D55AE (A0372726)	Power supply to VME bus backplane power harness: carries power from the output connectors to the VME bus backplane
NT7D55AF (A0372727)	VME bus backplane to disk/tape power harness: carries power from the VME bus backplane to the disk/tape connector
NT7D55AG (A0372728)	VME bus backplane to auxiliary/sense power harness: carries power from the VME bus backplane to the power sense card (and the MVME712AM transition card, if installed)
NT7D55AJ (A0372904)	Disk/tape internal power harness: connects power from the floating connectors to the disk/tape drives
NT7D55AK (AC) (A0372905) NT7D55AL (DC) (A0372906)	Power supply input harness: carries the input power from floating connectors on the power supply to the power supply input terminals
NT7D55BM (AC/DC) (A0372907)	Power supply output harness: carries the output from the terminal block (inside the power supply) to the floating connectors
NT7D55BG (A0375140)	VME logic return harness: connects logic return on the VME bus to the system logic return for signaling compatibility
NT8D40AM (AC) (A0350327) NT7D11AE (DC) (A0364644)	Module-to-module power harness

**Figure 57**  
**Power harness wiring diagram (Application Module)**



## Input/output cables

The Application Module has two types of I/O cable. These include

- internal cables that connect circuit cards to disk and tape drives within the Application Module
- external cables that connect the Application Module to the Meridian 1, the system console, and application terminals (if applicable)

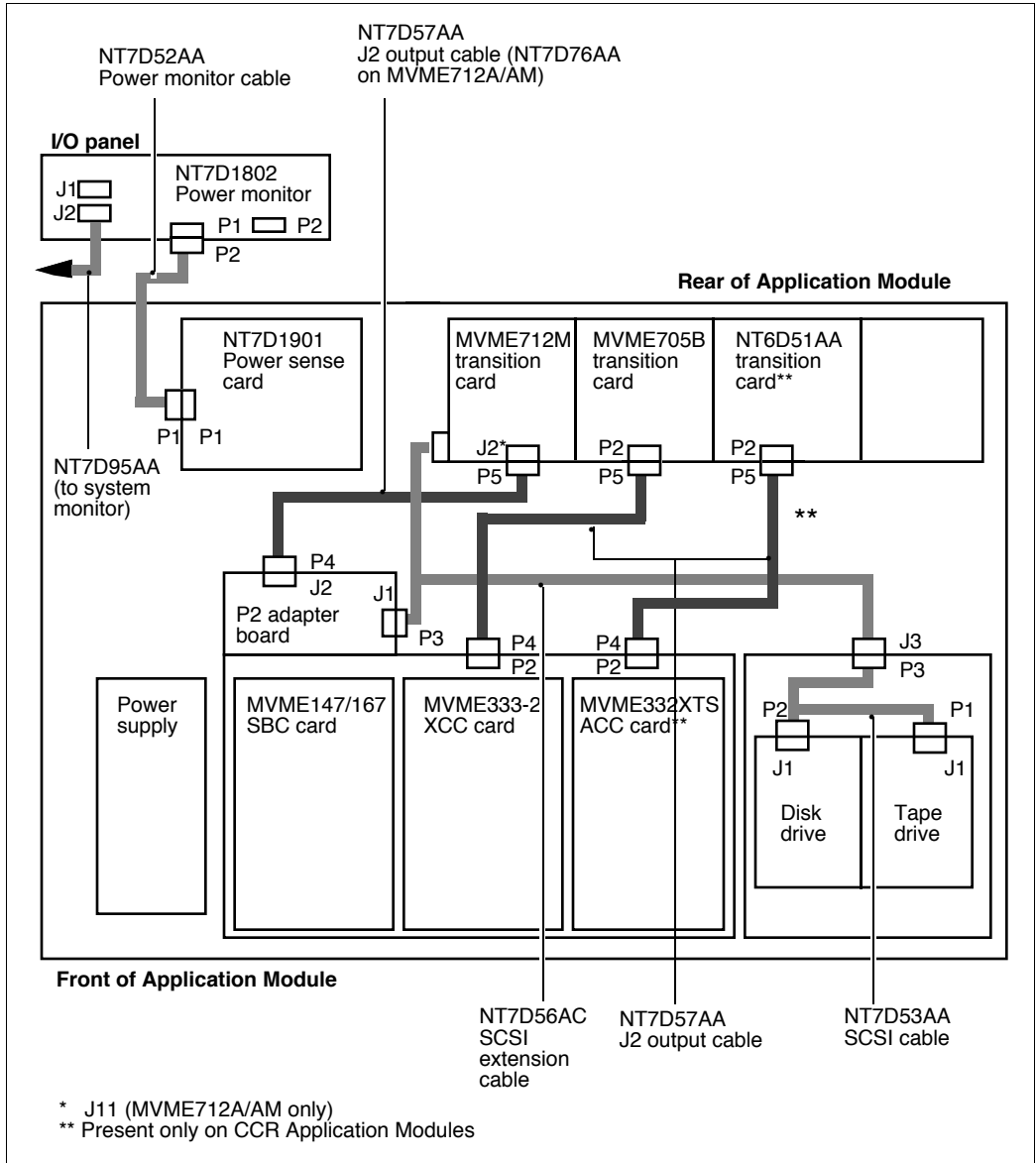
### Internal I/O cables

Internal cables interconnect components that are not connected through the VME bus backplane. Table 77 lists the Application Module internal cables. Figure 58 shows the internal cabling scheme.

**Table 77**  
**Internal I/O cables (Application Module)**

Part number	Cable description and application
NT7D52AA (A0372656)	Power monitor cable—3-pin connector, yellow and gray twisted wire cable: carries signals from the power sense card (P1) to the power monitor (P1 for a left-hand Application Module, P2 for a right-hand Application Module)
NT7D53AA (A0372657)	SCSI cable—50-pin connector cable: carries the SCSI interface from the floating connectors (J3) to the disk/tape drives (J1)
NT7D56AC (A0404311)	SCSI extension cable—50-pin connector cable: carries the SCSI interface from the adapter board (J3) to the external SCSI I/O port (via the MVME712M card) and the disk/tape unit (P3)
NT7D57AA (A0372913)	J2 output cable—64-pin connector, flat ribbon cable: carries I/O from the MVME333-2 XCC card to the MVME705B transition card, from the P2 adapter board (J2) to the MVME712M transition card (J2), and from the MVME332XTS ACC card to the NT6D51AA transition card
NT7D76AA (MVME712A/AM only)	Adapter board to transition card cable—64-pin connector, flat ribbon cable: carries I/O from the adapter board (J2) to the MVME712 transition card (J11)
NT8D46AA (A0356972)	System monitor cable—40-pin connector cable: carries signals from the power monitor (J1, J2) to the system monitor in the column

**Figure 58**  
**Internal I/O cabling (Application Module)**



**External I/O cables (Application Module)**

Tables 78, 79, and 80 list external I/O cables that connect ports on the transition cards to connectors on either the I/O subpanel or the universal I/O panel. Table 78 lists external I/O cables that connect the I/O panel connectors to an SDI port, the ESDI/MSDL port, the main distribution frame (MDF), and consoles. Figure 60 shows the cables used between the transition cards, the I/O subpanel, and external equipment. Figure 61 shows the cables used between the transition cards, the universal I/O panel, and external equipment. Figure 63 shows the cables used between the transition cards, the generic I/O panel and external equipment. Figure 73 shows the cables going to the Meridian 1 or Meridian 1 I/O panel.

**Table 78****Cables from transition cards to I/O subpanel (Application Module)**

Part number	Length	Cable description and application
NT7D46AA (A0372653)	35 cm (14 in.)	9-pin (DB9) round subminiature D-style cable: connects port 3 (J4) on the MVME712A or AM transition card to the J8 port
NT7D48AA (A0372655)	35 cm (14 in.)	25-pin (DB25) round subminiature D-style cable: connects ports SP1 (ESDI port) and SP3 (host port) on the MVME705B transition card to J2 and J3
NT7D60AA* (A0373962) (MVME712AM)	35 cm (14 in.)	4-pin RJ11 to 9-pin subminiature D-style cable: connects the built-in modem (teledapt connector) on the MVME712AM transition card to J9
NT7D61DA	35 cm (14 in.)	9-pin to 25-pin subminiature D-style cable: connects port SP4 on the MVME712A/AM card to J1
NT7D79AA (A0387839)	35 cm (14 in.)	9-pin round subminiature D-style cable: connects port J1 on the MVME712A or AM transition card to J7
NT7D95AA**	22 cm (9 in.)	25-pin flat subminiature D-style cable: connects SP1, SP2, and SP3 on the NT6D51AA transition card to J4, J5, and J6
* When the MVME712A card is used, the NT7D60AA cable is replaced by an NT7D46AA cable, which connects port SP2 on the transition card to J9.		
** Used only when NT6D51AA card is present (CCR Application Module).		

**Table 79**  
**Cables from transition cards to the universal I/O panel (Application Module)**

Part number	Length	Cable description and application
NT7D46AA (A0372653) (MVME712A/AM)	35 cm (14 in.)	9-pin (DB9) round subminiature D-style cable: connects port SP1 on the MVME712A or AM transition card to the SDI link port
NT7D48AA (A0372655) (replaced by NT7D95AA on newer systems)	35 cm (14 in.)  22 cm (9 in.)	25-pin (DB25) round subminiature D-style cable: connects ports SP1 (ESDI port) and SP3 (host port) on the MVME705B transition card to the ESDI link and Host ports
NT7D60AA* (A0373962) (MVME712AM)	35 cm (14 in.)	4-pin RJ11 to 9-pin subminiature D-style cable: connects the built-in modem (teledapt connector) on the MVME712AM transition card to the Int Modem port
NT7D61DA	35 cm (14 in.)	9-pin to 25-pin subminiature D-style cable: connects port SP4 on the MVME712A/AM card to the Spare port
NT7D79AA (A0387839) (MVME712A/AM)	35 cm (14 in.)	9-pin round subminiature D-style cable: connects port SP1 on the MVME712A or AM transition card to the SYS CONS port
NT7D95AA**	22 cm (9 in.)	25-pin flat subminiature D-style cable: connects SP1, SP2, and SP3 of the NT6D51AA transition card to serial I/O ports 1–3, 4–6, and 7–8
<p>* When the MVME712A card is used, the NT7D60AA cable is replaced by an NT7D46AA cable, which connects port SP2 on the transition card to the AML.</p> <p>** Used only when NT6D51AA card is present (CCR Application Module).</p>		



**Table 80**  
**Cables from transition cards to generic I/O panel (Application Module)**

Part number	Length	Cable description and application
NT7D47DA	35 cm (14 in.)	15-pin cable: connects the Ethernet port of the MVME712M transition card to the Ethernet port (this cable is not shipped with the Application Module)
NT7D58CA (A0403488)	35 cm (14 in.)	15-pin to 25-pin subminiature D-style cable: connects port SP4 on the MVME712M transition card to card 1 conn 4
NT7D79BA (A0403432)	35 cm (14 in.)	9-pin to 25-pin subminiature D-style cable: connects ports SP1, SP2, and SP3 on the MVME712M transition card to card 1 conn 1–3
NT7D95AA	22 cm (9 in.)	25-pin flat subminiature D-style cable: connects SP1, SP3, and SP5 on the MVME705B transition card to card 2 conn 1-3 and also connects SP1, SP2, and SP3 of the NT6D51AA transition card (if present) to card 3 conn 1–3

**Table 81**  
**Cables to external equipment (Application Module)**

Part number	Length	Cable description and application
NT7D46AB (A0373932) NT7D46AD (A0373933) NT7D46AF (A0373934) NT7D46AL (A0373935) NT7D46AT (A0373936) NT7D46AV (A0373937)	0.6 m (2 ft.) 1.8 m (6 ft.) 3 m (10 ft.) 6 m (20 ft.) 10.6 m (35 ft.) 13.7 m (45 ft.)	9-pin round subminiature D-style cable: for an SDI Paddle Board, connects <ul style="list-style-type: none"> <li>• J8 on the I/O subpanel</li> <li>• SDI link on the universal I/O panel</li> <li>• card 1 conn 3 on the generic I/O panel</li> </ul> to the SDI port connection at the Meridian 1
NT7D47EA	3 m (10 ft.)	15-pin drop cable: connects the Ethernet port of the generic I/O panel to an Ethernet transceiver (not shipped with the Application Module)
NT7D58AB (A0373938) NT7D58AD (A0373939) NT7D58AF (A0373940) NT7D58AL (A0373941) NT7D58AT (A0373942) NT7D58AV (A0373943)	0.6 m (2 ft.) 1.8 m (6 ft.) 3 m (10 ft.) 6 m (20 ft.) 10.6 m (35 ft.) 13.7 m (45 ft.)	25-pin round subminiature D-style cable: connects <ul style="list-style-type: none"> <li>• J2 on the I/O subpanel</li> <li>• ESDI link on the universal I/O panel</li> <li>• card 2 conn 1 on the generic I/O panel</li> </ul> to the ESDI/MSDL port connection at the Meridian 1
NT7D61AB (A0374031) NT7D61AD (A0374070) NT7D61AF (A0374071) NT7D61AL (A0374072) NT7D61AT (A0374073) NT7D61AV (A0374074)	0.6 m (2 ft.) 1.8 m (6 ft.) 3 m (10 ft.) 6 m (20 ft.) 10.6 m (35 ft.) 13.7 m (45 ft.)	25-pin round subminiature D-style cable: for an SDI card, connects <ul style="list-style-type: none"> <li>• J8 on the I/O subpanel</li> <li>• SDI link on the universal I/O panel</li> <li>• card 1 conn 3 on the generic I/O panel</li> </ul> to the SDI port connection at the Meridian 1. <p>This cable may also be used</p> <ul style="list-style-type: none"> <li>• to connect the modem port on the universal I/O panel or card 1 conn 2 on the generic I/O panel to the external modem</li> <li>• with a gender changer, to connect the system console to port J7 on the I/O subpanel, the SYS CONS port on the universal I/O panel, or card 1 conn 1 on the generic I/O panel</li> </ul>
— continued —		

**Table 81**  
**Cables to external equipment (Application Module) (continued)**

Part number	Length	Cable description and application
NT7D61AB (A0374031) NT7D61AD (A0374070) NT7D61AF (A0374071) NT7D61AL (A0374072) NT7D61AT (A0374073) NT7D61AV (A0374074)	0.6 m (2 ft.) 1.8 m (6 ft.) 3 m (10 ft.) 6 m (20 ft.) 10.6 m (35 ft.) 13.7 m (45 ft.)	25-pin round subminiature D-style cable: for an SDI card, connects <ul style="list-style-type: none"> <li>• J8 on the I/O subpanel</li> <li>• SDI link on the universal I/O panel</li> <li>• card 1 conn 3 on the generic I/O panel</li> </ul> to the SDI port connection at the Meridian 1.  This cable may also be used <ul style="list-style-type: none"> <li>• to connect the modem port on the universal I/O panel or card 1 conn 2 on the generic I/O panel to the external modem</li> <li>• with a gender changer, to connect the system console to port J7 on the I/O subpanel, the SYS CONS port on the universal I/O panel, or card 1 conn 1 on the generic I/O panel</li> </ul>
NT7D71BA (A0394776) (MVME712AM)	2.1 m (7 ft.) (same length revised)	9-pin subminiature D-style to 4-pin RJ11 cable connects <ul style="list-style-type: none"> <li>• J9 on the I/O subpanel</li> <li>• Int Modem on the universal I/O panel</li> </ul> to the MDF through in-house distribution (only used with the MVME712AM card)
NT8D82AC NT8D82AD	1.2 m (4 ft.) 1.8 m (6 ft.)	25-pin round subminiature D-style cable: connects the ESDI card and SDI card (all types except the NT8D41 SDI Paddle Board) to the Meridian 1 I/O panel
NTND27AB	1.8 m (6 ft.)	26-pin SCSI II cable: connects the MSDL card to the Meridian 1 I/O panel
<b>— continued —</b>		

**Table 81**  
**Cables to external equipment (Application Module) (continued)**

Part number	Length	Cable description and application
NTND82AA	1.2 m (4 ft.)	25-pin round subminiature D-style cable connects <ul style="list-style-type: none"> <li>• J1 on the I/O subpanel</li> <li>• Spare port on the universal I/O panel</li> </ul> to a data port interface cable of Meridian Mail systems via a 25-pin extension cable (NT1R03).
NT7D58BB	0.6 m (2 ft.)	15-pin to 25-pin straight-through cable: connects to a data port interface cable of Meridian Mail systems via a 25-pin extension cable (NT1R03).
NT8D93AJ (A0357270) NT8D93AW (A0357271)	4.8 m (16 ft.) 14.4 m (48 ft.)	SDI cable for NT8D41
NT8D96AE	2.4 m (8 ft.)	DB25 to 3-DB25 multi-port cable that acts as the cable converter for the I/O
NTAK19AA (A0372718) NTAK19BA (A0372719)		Two-port SDI cable for SDI/TDS, Option 11 Four-port SDI cable for Quad I/O, Option 11
NT1R03DB (A0402335) NT1R03DC (A0402336) NT1R03DF (A0402337) NT1R03DP (A0402338) NT1R03DV (A0402339)	0.6 m (2 ft.) 1.2 m (4 ft.) 3 m (10 ft.) 7.5 m (25 ft.) 13.7 m (45 ft.)	25-pin round subminiature D-style extension cable (male to male)
NT1R03EB (A0402330) NT1R03EC (A0402331) NT1R03EF (A0402332) NT1R03EP (A0402333) NT1R03EV (A0402334)	0.6 m (2 ft.) 1.2 m (4 ft.) 3 m (10 ft.) 7.5 m (25 ft.) 13.7 m (45 ft.)	25-pin round subminiature D-style extension cable (male to female)

## Cabling the Application Module to external equipment

The following procedure to cable the Application Module to external equipment is only one of a series of procedures to install an Application Module. The series is shown in Table 12 in Chapter 5, “Hardware installation overview.” Ensure that you have completed steps 1 through 6 in Table 12 before you start the following procedure.

Complete the Application Module hardware installation by connecting the external cables. Figures 59 and 60 show the I/O subpanel connectors. Figures 61 and 62 show the universal I/O panel connectors. Figures 63 and 64 show generic I/O panel connectors. Figures 65–74 show the cabling. Refer to the “Application Module cabling” section for more information on cabling.

- 1 If you are using an MVME712M or MVME712A transition card, go to step 2. To connect the built-in modem on the MVME712AM transition card, connect an NT7D71BA cable from the Application Module connection

- J9 on the I/O subpanel
- INT MODEM on the universal I/O panel
- card 1 conn 4 on the generic I/O panel

to the building wiring and terminate at the MDF. For more information, refer to “Internal modem cabling (MVME712AM card only)” in this chapter.

If the modem connection is through the Meridian 1, connect to a 500/2500 line card. If the modem is not to be connected through the Meridian 1, connect to a central office (CO) line.

**Note:** This connection is required for technical support for your system.

- 2** If you are using an MVME712AM transition card, skip this step. To connect an external modem to the Application Module, connect a 9-pin to 25-pin null modem cable from the Application Module connector

- J9 on the I/O subpanel
- EXT MODEM on the universal I/O panel
- card 1 conn 2 on the generic I/O panel

to the external modem.

Connect the modem to a central office (CO) line or 500/2500 line card, and to a power source.

- 3** To connect the system console to the Application Module, connect a 9-pin-to-25-pin cable (or an extra NT7D61 cable) from the Application Module connector

- J7 on the I/O subpanel
- SYS CONS on the universal I/O panel
- card 1 conn 1 on the generic I/O panel

to the console. For more information, refer to “System console cabling (Application Module)” in this chapter.

See Chapter 10, “Installing peripheral devices” in this guide for information on configuring your terminal correctly. See Chapter 11, “Peripheral device cabling interface” in this guide if you are using an A/B switchbox with the system console.

- 4** To connect an SDI port to the Application Module for optional conshare capability:

- For SDI cards other than the NT8D41 SDI Paddle Board, connect an NT7D61 cable from the Application Module connector (J8 on the I/O subpanel, SDI LINK on the universal I/O panel, or card 1 conn 3 on the generic I/O panel) to the SDI port connector on the Meridian 1. For more information, refer to “SDI cabling (Application Module)” in this chapter.
- For an NT8D41 SDI Paddle Board, connect an NT7D46 cable from the Application Module connector (J8 on the I/O subpanel, SDI LINK on the universal I/O panel, or card 1 conn 3 on the generic I/O panel) to the SDI port connector on the Meridian 1. For more information, refer to “SDI Paddle Board cabling (Application Module)” in this chapter.

- 5 To connect the MSDL port to the Meridian 1 I/O panel, connect an NTND27 cable (if DCE) or an NTND26 (if DTE) cable from the MSDL port to
- J2 on the I/O subpanel
  - ESDI Link port on the universal I/O panel
  - card 2 conn 1 on the generic I/O panel
- 6 To connect an ESDI/MSDL port to the Application Module, connect an NT7D58 cable from the Application Module connector to
- J2 on the I/O subpanel
  - ESDI LINK on the universal I/O panel
  - card 2 conn 1 on the generic I/O panel

to the ESDI/MSDL port connection on the Meridian 1. For more information, refer to “ESDI/MSDL cabling (Application Module)” later in this chapter.

- 7 To connect the Application Module to the Meridian Mail system:
- If your Application Module has an MVME712M transition card, connect an NT7D58CA cable from SP4 of the MVME712M card to card 1 conn 4 of the generic I/O panel, and connect an NT7D58BB cable from card 1 conn 4 of the generic I/O panel to the NT1R03 cable that connects to Meridian Mail. See Table 82 for pinouts of the NT7D58 cable.
  - If your Application Module has an I/O subpanel, connect an NT7D61DA cable from SP4 of the MVME712A or AM card to port J1 of the I/O subpanel, and connect an NTND82AA cable from port J1 to the NT1R03 cable that connects to Meridian Mail.
  - If your Application Module has a universal I/O panel, connect an NT7D61DA cable from SP4 of the MVME712A or AM card to the spare port of the universal I/O panel, and connect an NTND81AA cable from the spare port of the universal I/O panel to the NT1R03 cable that connects to Meridian Mail.

For more information, refer to “Meridian Mail cabling (Application Module)” later in this chapter.

**8** For the X.25 host link, connect a customer-supplied cable from the Application Module connector:

- J3 on the I/O sub-panel
- Host on the universal I/O panel
- card 2 conn 2 on the generic I/O panel

to the host computer. For more information, refer to “Host computer cabling (Application Module)” in this chapter.

**9** To connect the terminals and/or printers to the Application Module, connect an RS-232 cable to one of the three connectors on the VME multi-port cables that are connected to one of the following:

- J4, J5, and J6 on the I/O subpanel
- Serial I/O 1–3, 4–6, or 7–8 on the universal I/O panel
- card 3 conn 1–3 on the generic I/O panel

**Note:** For connection to J6, Serial I/O 7–8, or card 3 conn 3, the C connector is not used.

See Chapter 10, “Installing peripheral devices” for information on configuring your terminals and printers correctly. See Chapter 11, “Peripheral device cabling interface” for information on using limited-distance or dial-up modems for any terminals or printers located more than 15 m (50 ft.) from the Application Module.

**10** Make sure the breaker or switch on the blower unit is set to ON (up). It is located in the front of the pedestal in the AEM column.

**11** Set all circuit breakers located in the rear of the pedestal to ON (up).

**12** Power up any external modems and the system console.

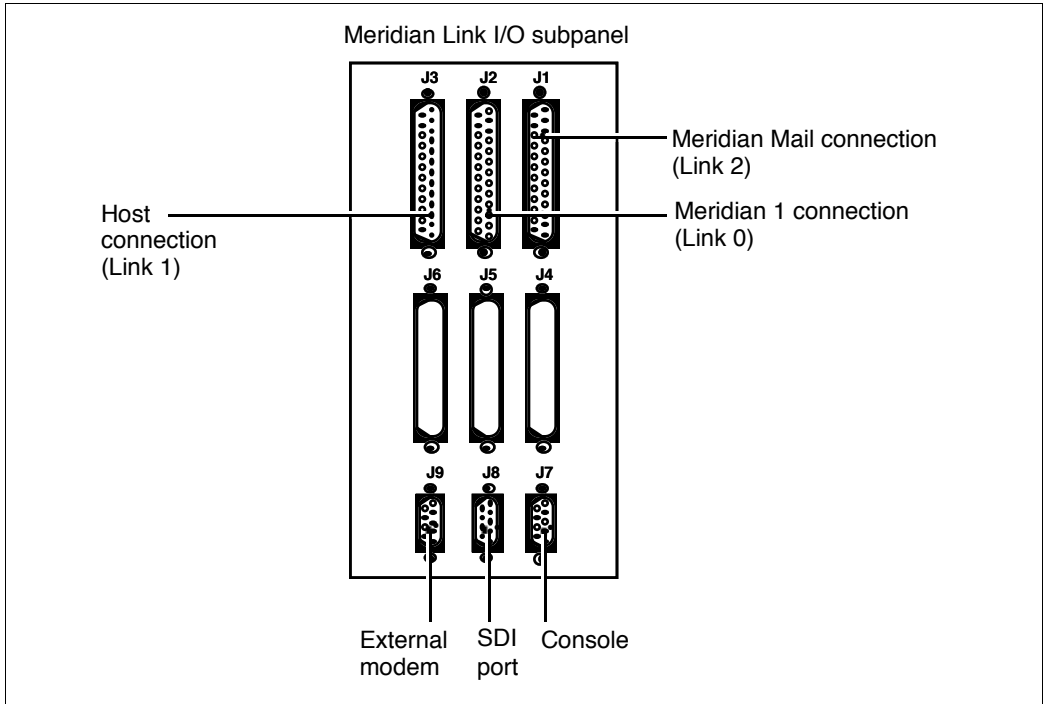
**13** Set the circuit breaker associated with the Application Module to ON (up). It is located at the front of the AEM. The top breaker powers the module on the left side of the AEM; the bottom breaker powers the right-side module.

**14** Install all covers and grills on the AEM column.

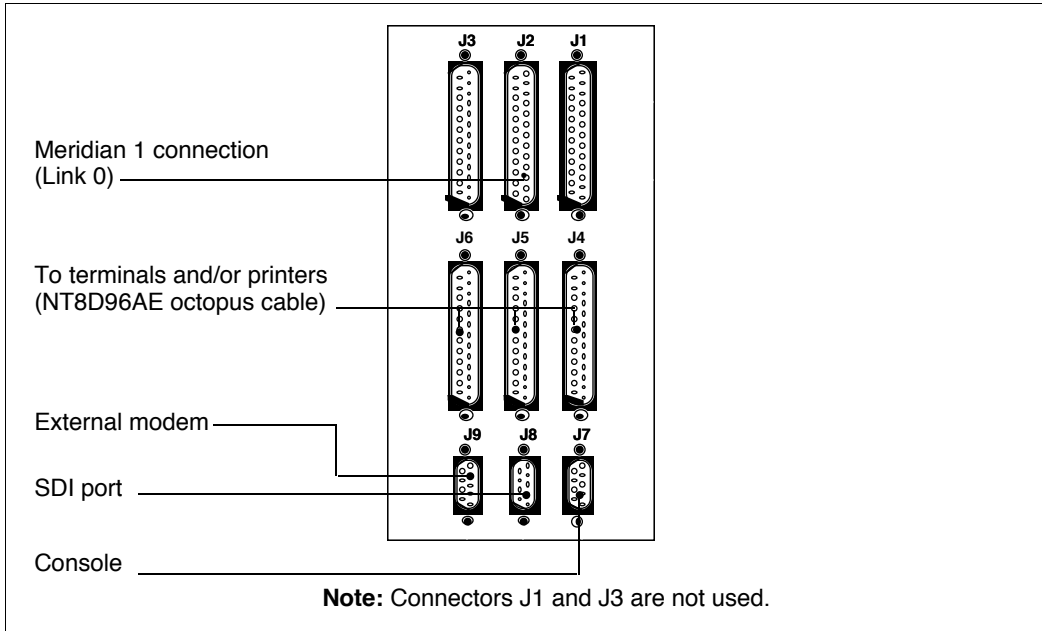
**Note:** Return to Chapter 5, “Hardware installation overview” for the next procedure. Refer to “Installing Ethernet LAN support” in this chapter for more information about Ethernet LAN cabling.



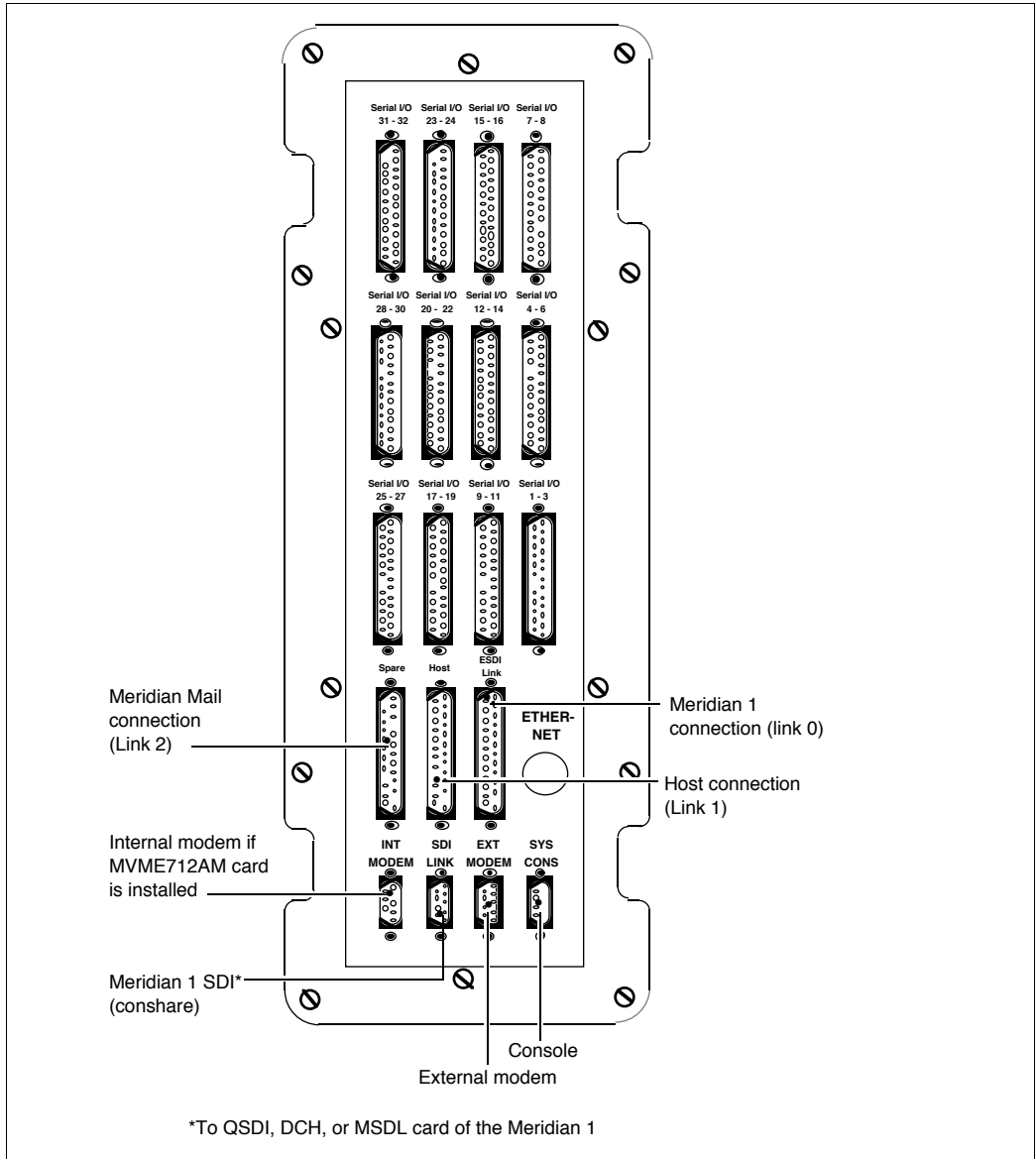
**Figure 59**  
**I/O subpanel connectors (Meridian Link)**



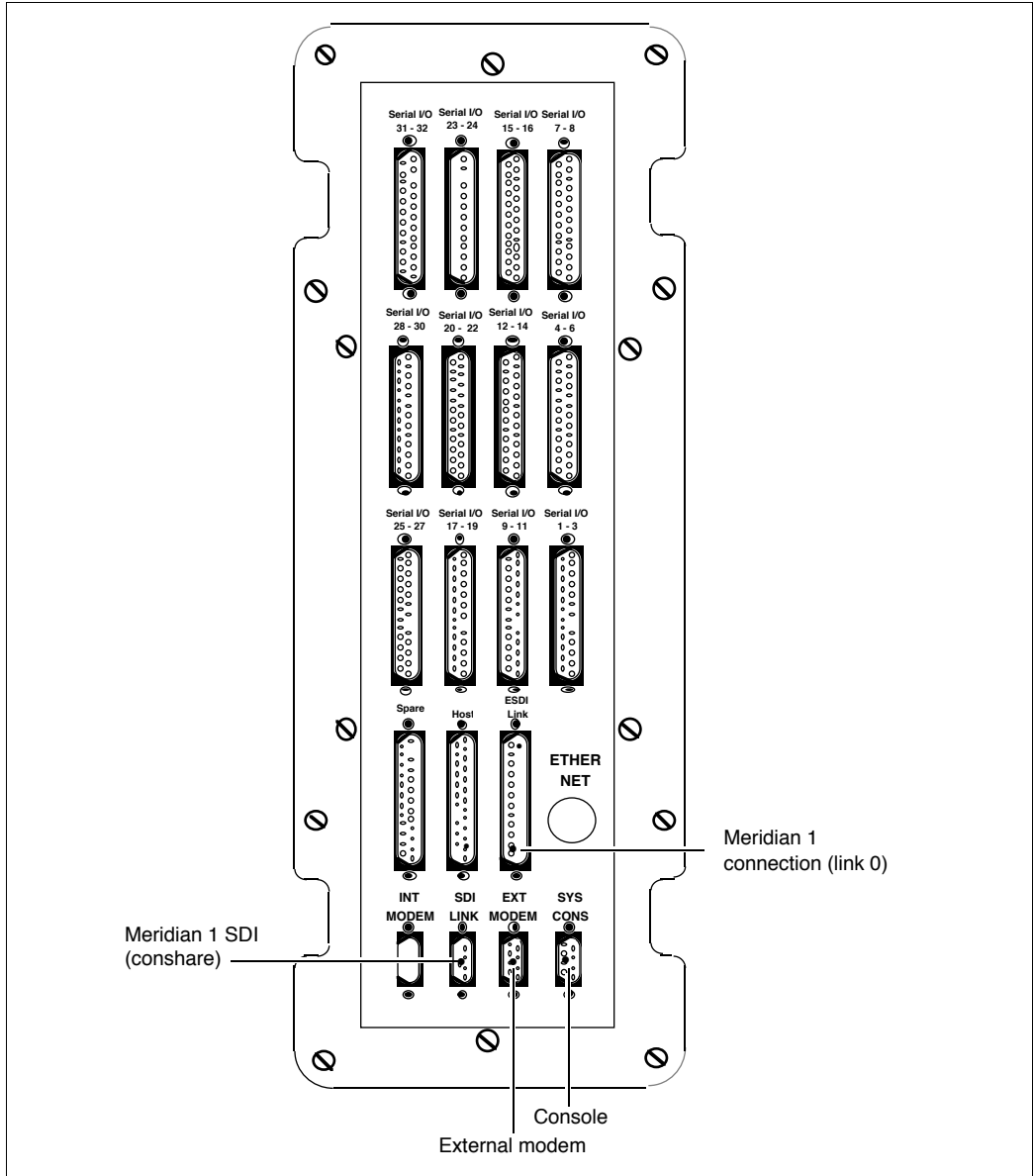
**Figure 60**  
**I/O subpanel connectors (CCR)**



**Figure 61**  
**Universal I/O panel (Meridian Link and co-residency)**



**Figure 62**  
**Universal I/O panel (CCR)**



**Figure 63**  
**Generic I/O panel (Meridian Link and co-residency)**

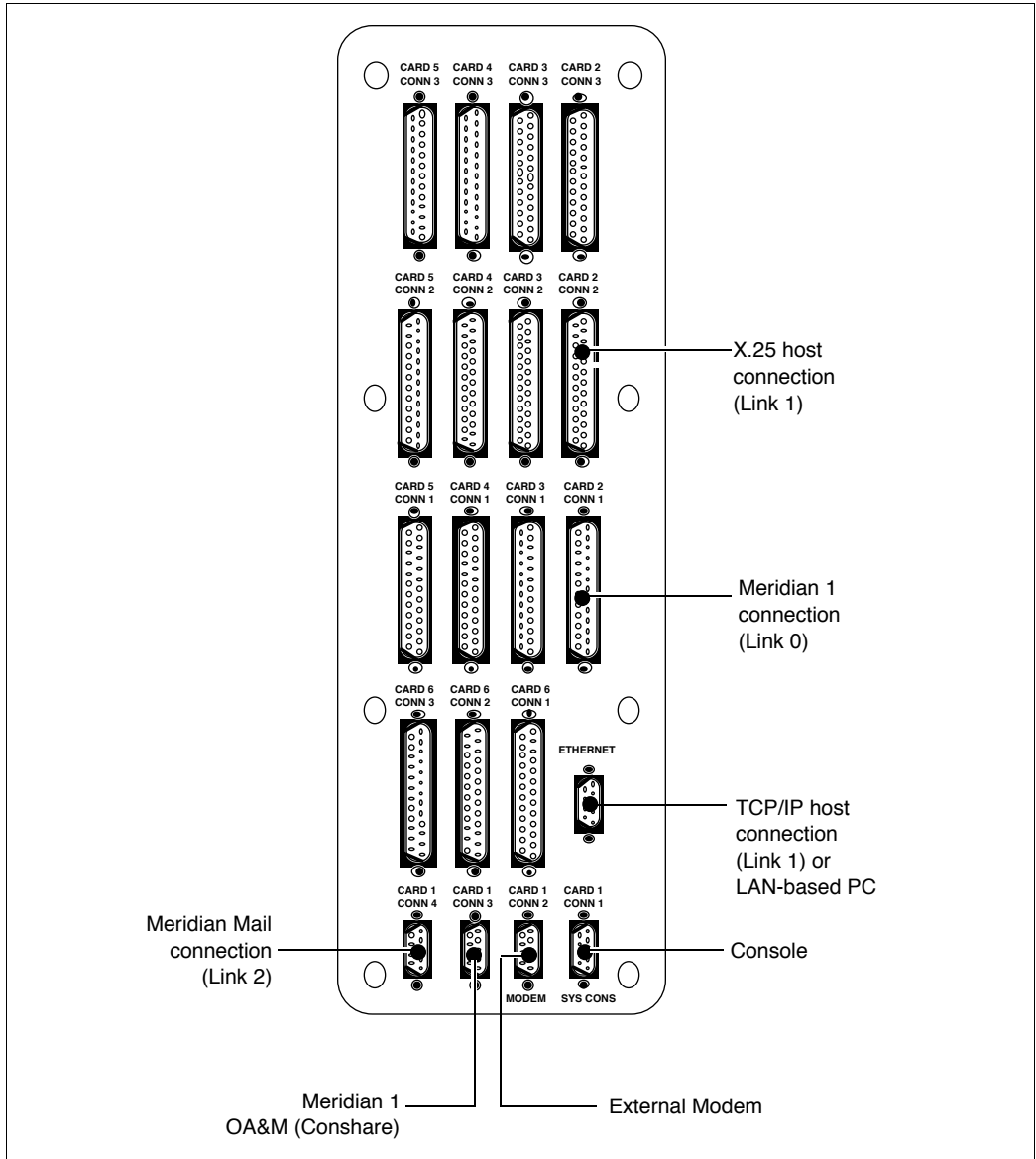
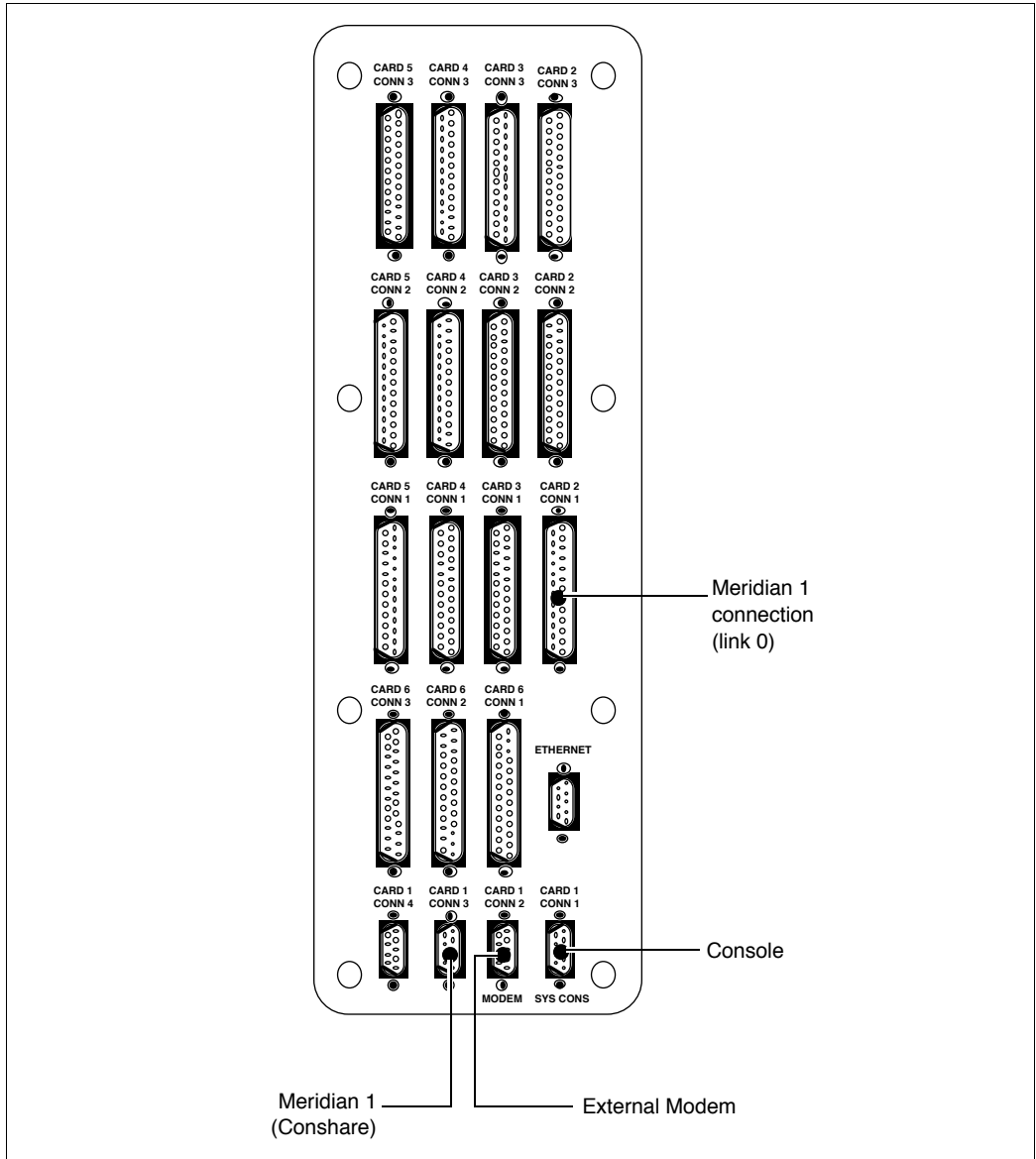
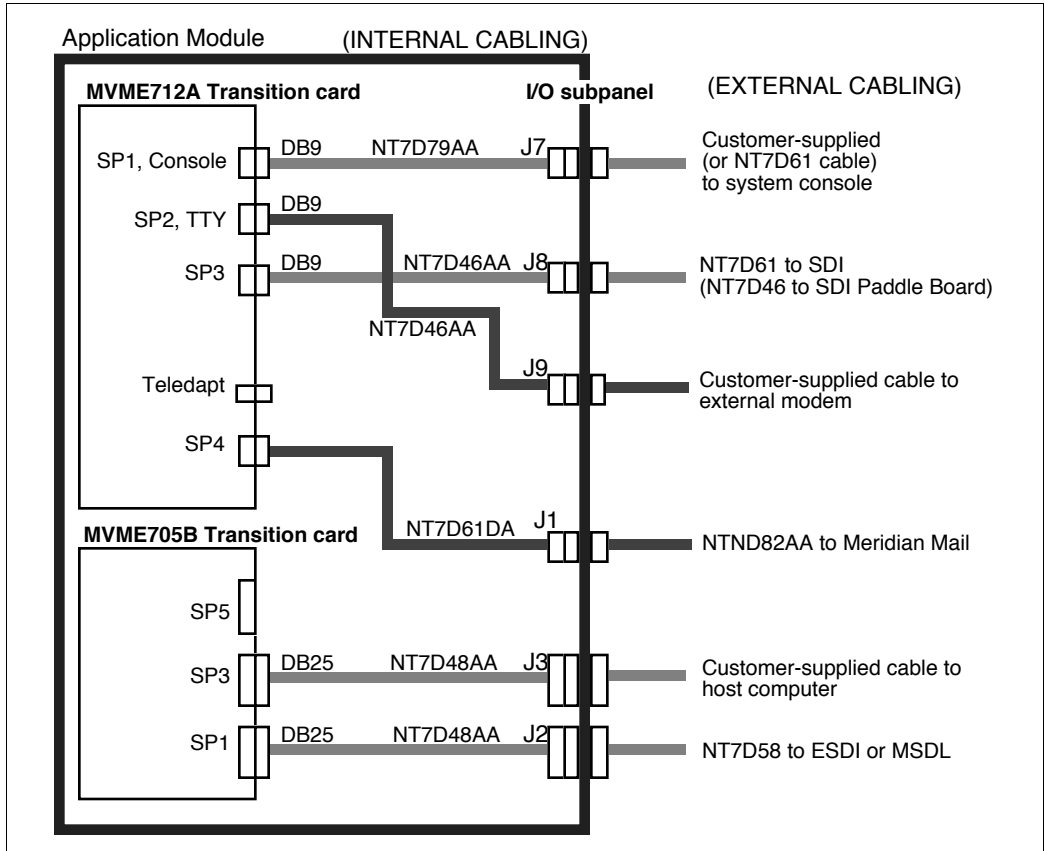


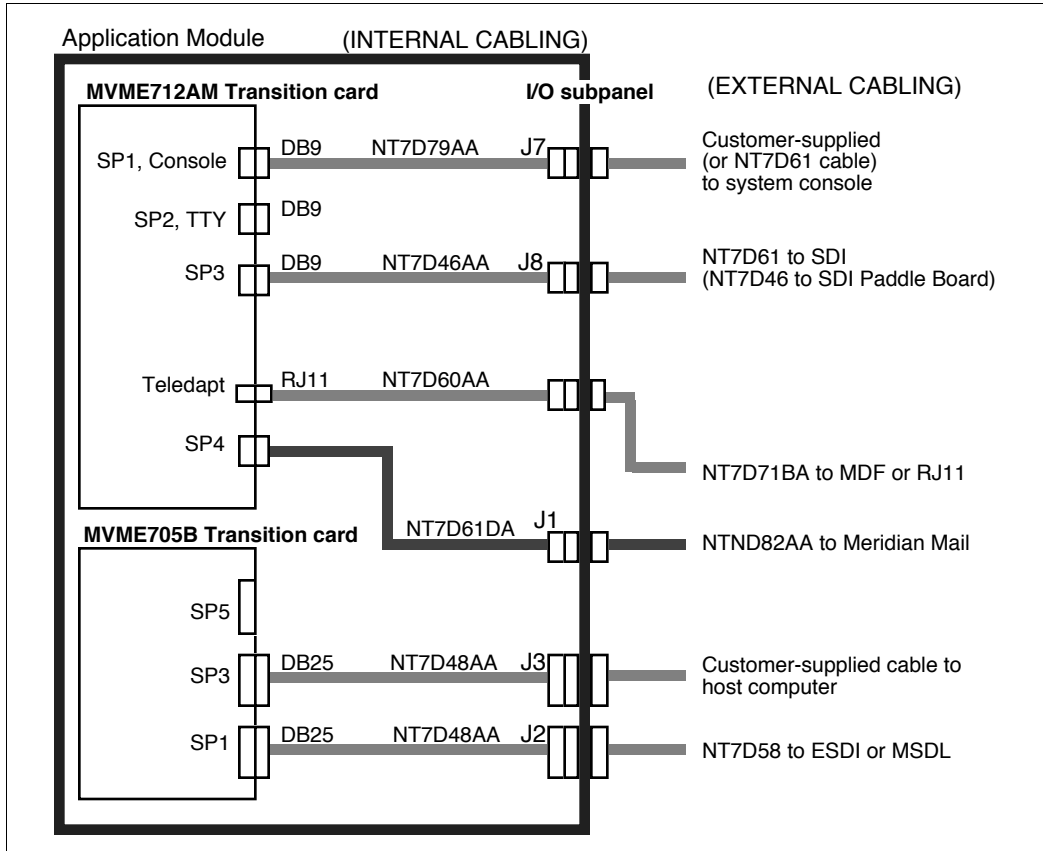
Figure 64  
Generic I/O panel (CCR)



**Figure 65**  
**Application Module MVME712A and MVME705B I/O cabling—/O subpanel (Meridian Link)**

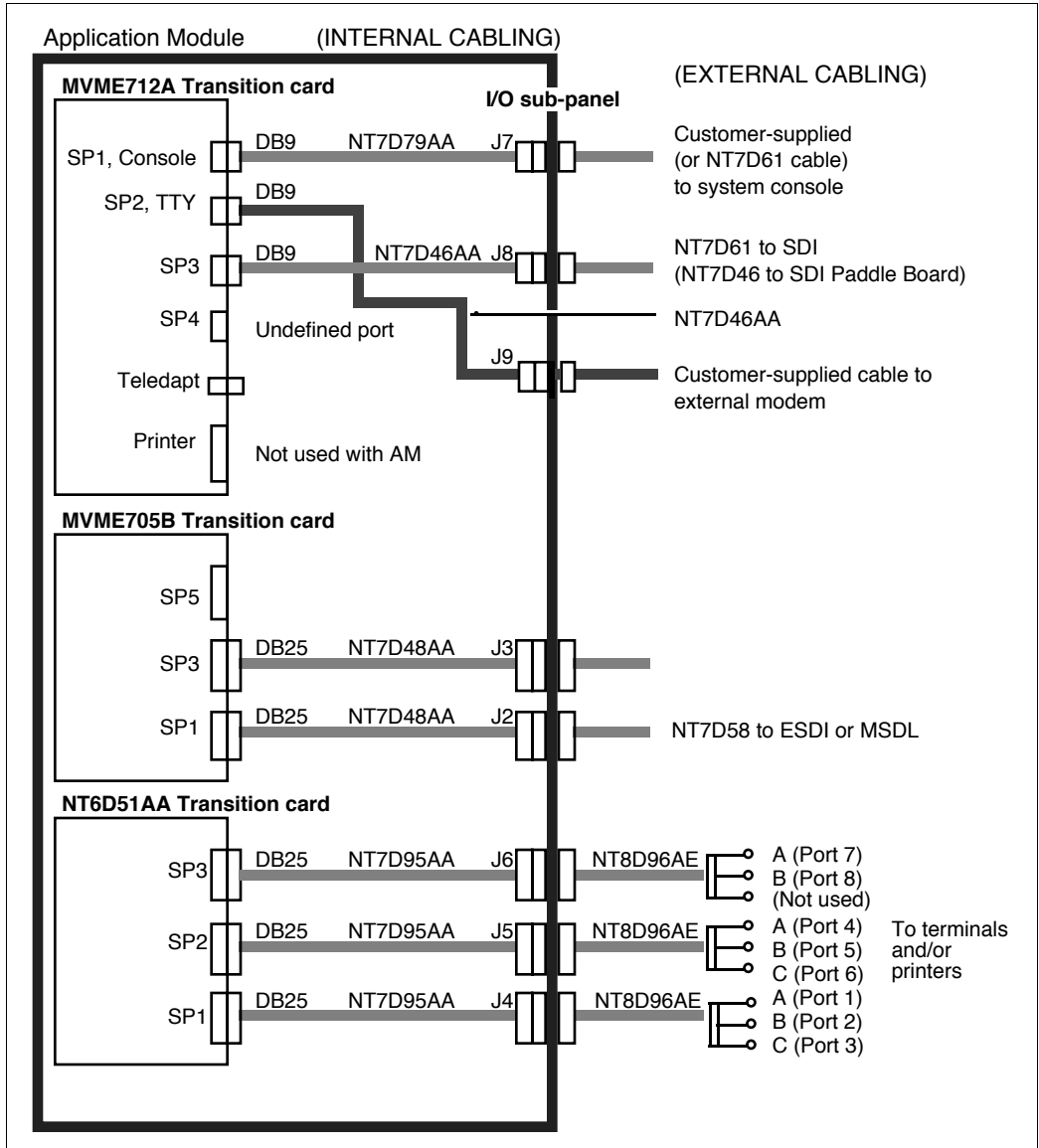


**Figure 66**  
**Application Module MVME712AM and MVME705B I/O cabling—I/O subpanel (Meridian Link)**

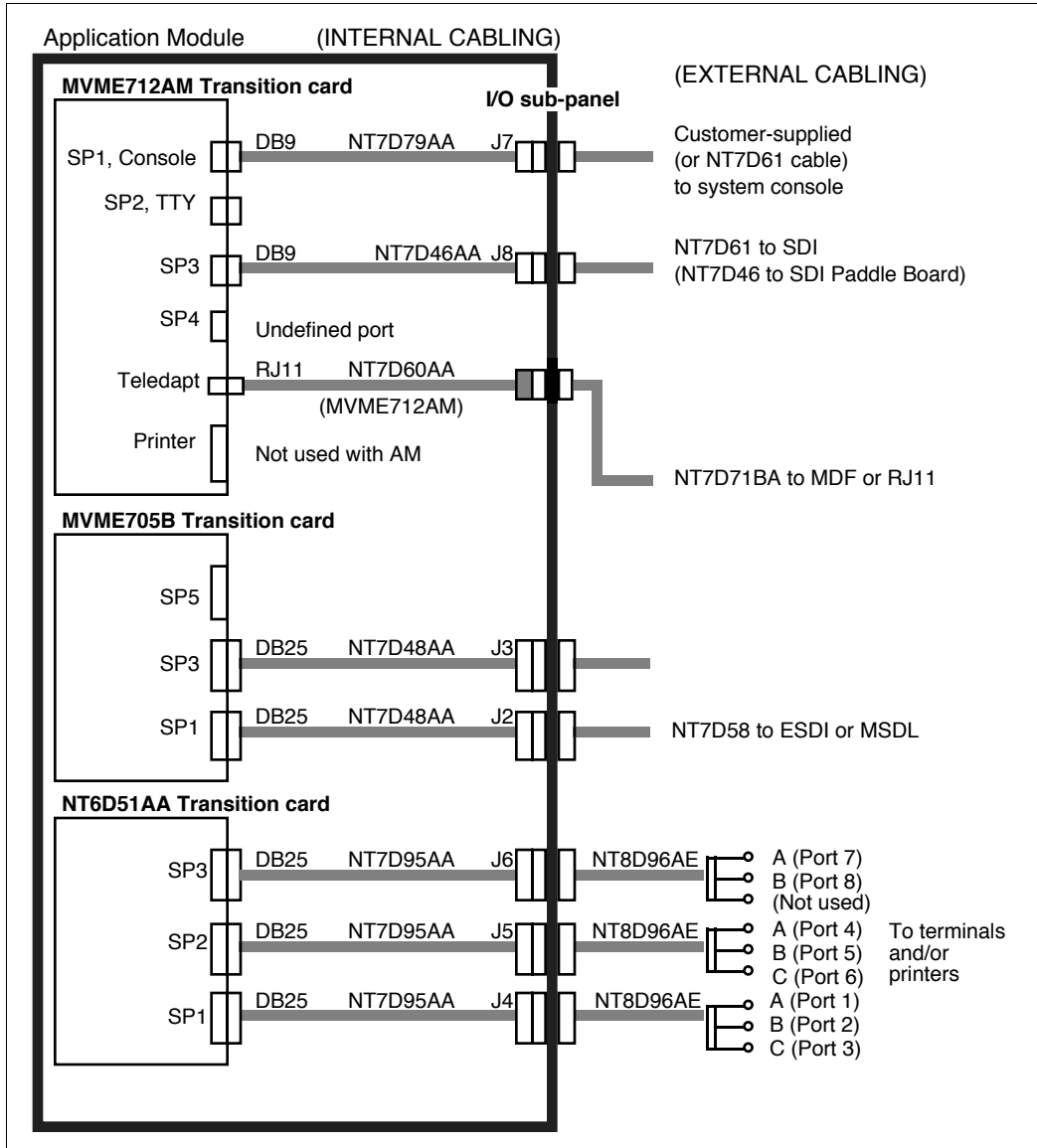




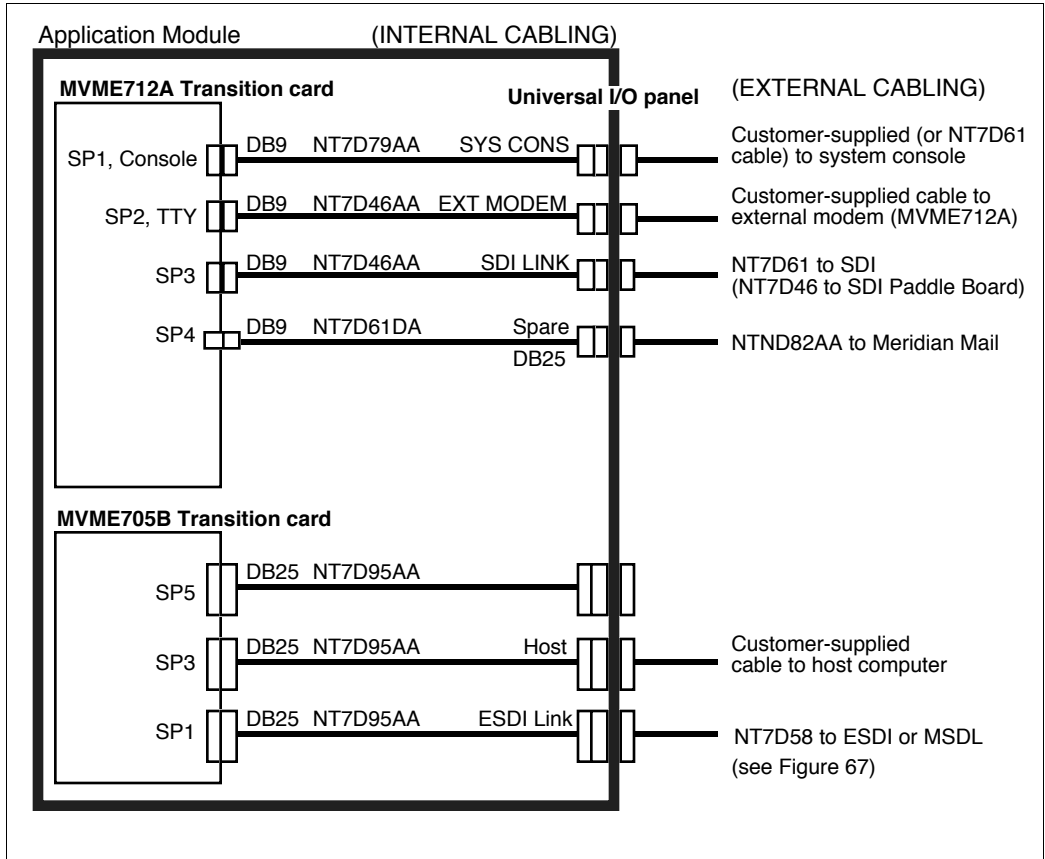
**Figure 67**  
**Application Module MVME712A, MVME705B, NT6D51AA cabling—I/O subpanel (CCR)**



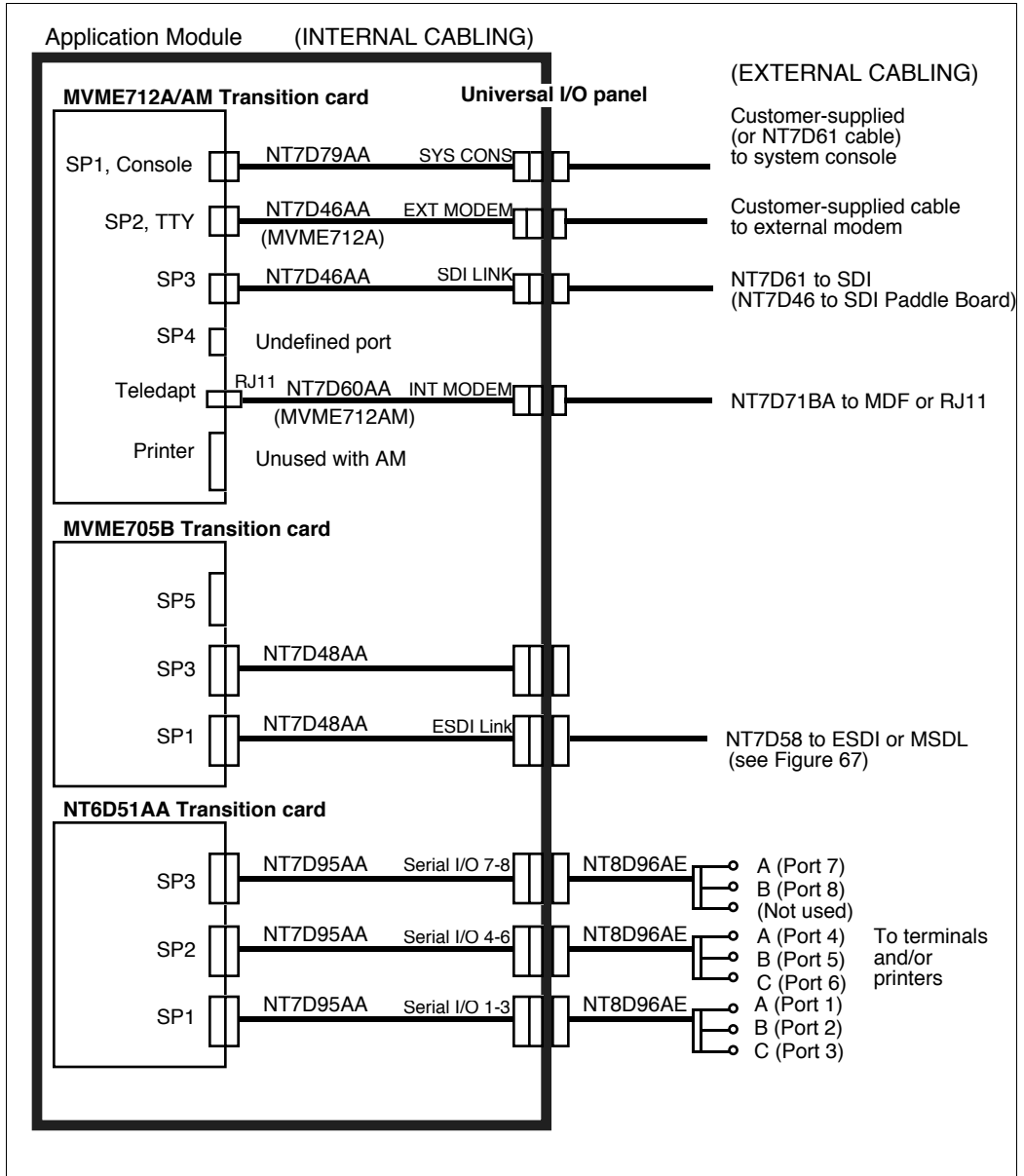
**Figure 68**  
**Application Module MVME712AM, MVME705B, NT6D51AA cabling—I/O subpanel (CCR)**



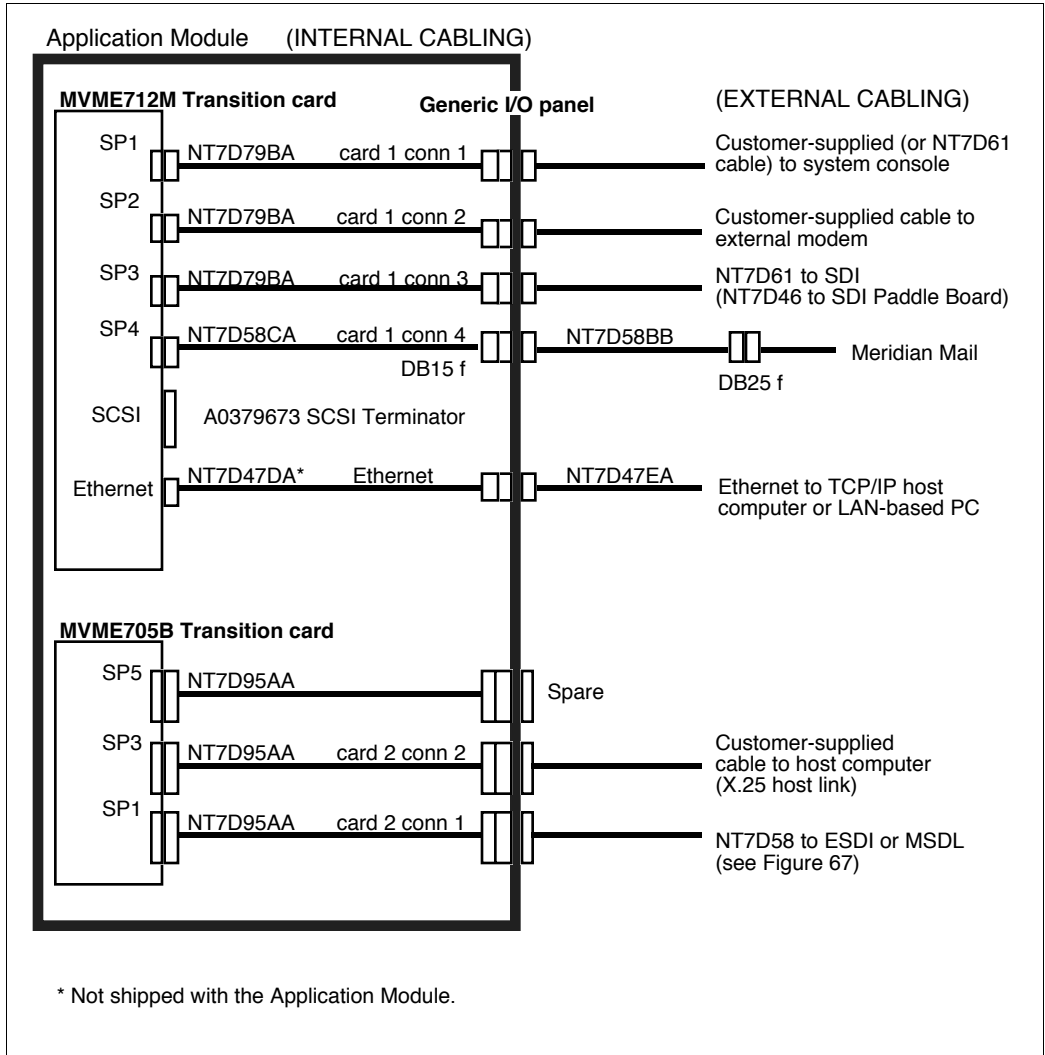
**Figure 69**  
**Application Module external I/O cabling to and from universal I/O panel (Meridian Link)**



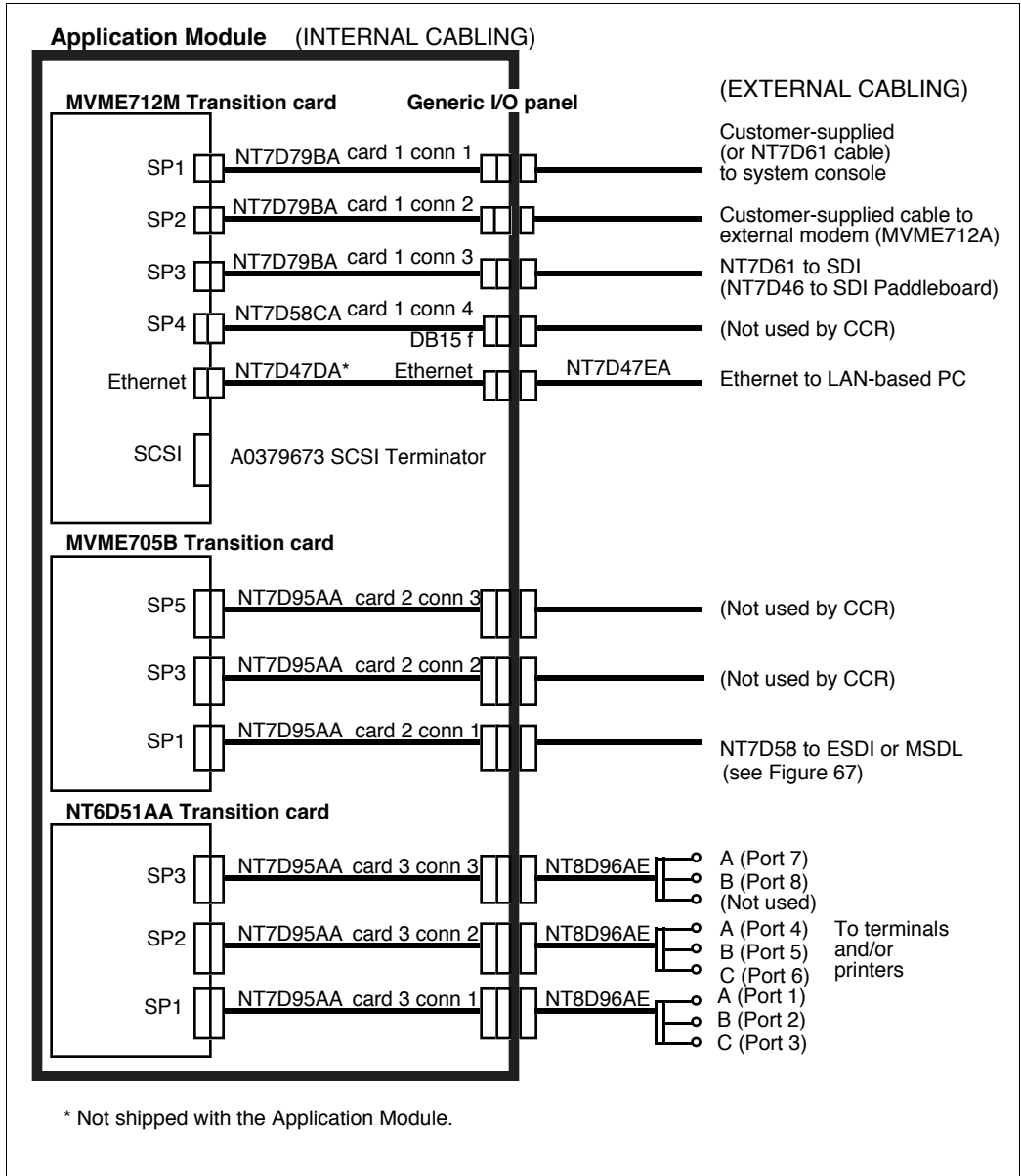
**Figure 70**  
**Application Module external I/O cabling to and from universal I/O panel (CCR)**



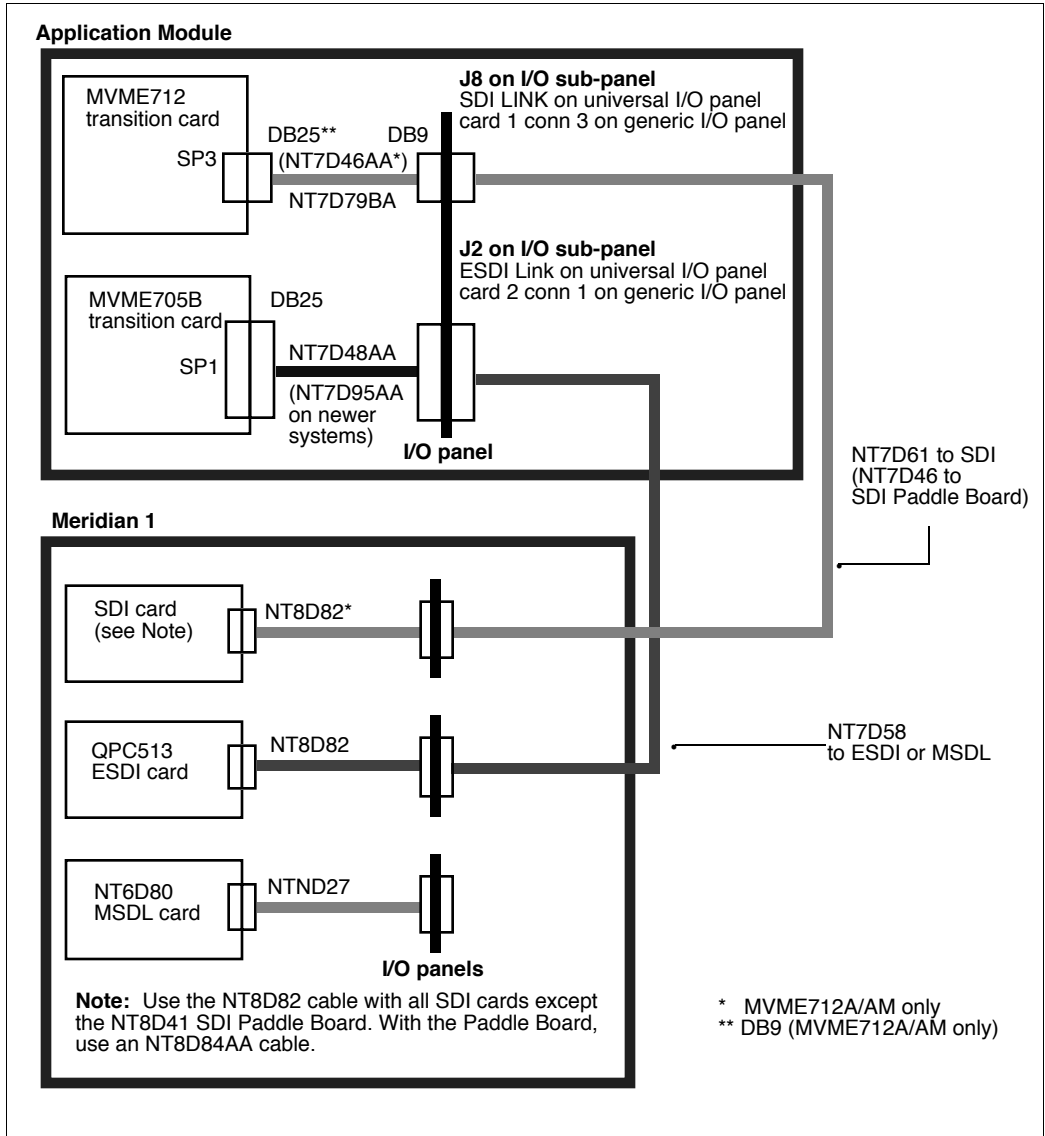
**Figure 71**  
**Application Module external cabling to and from generic I/O panel (Meridian Link)**



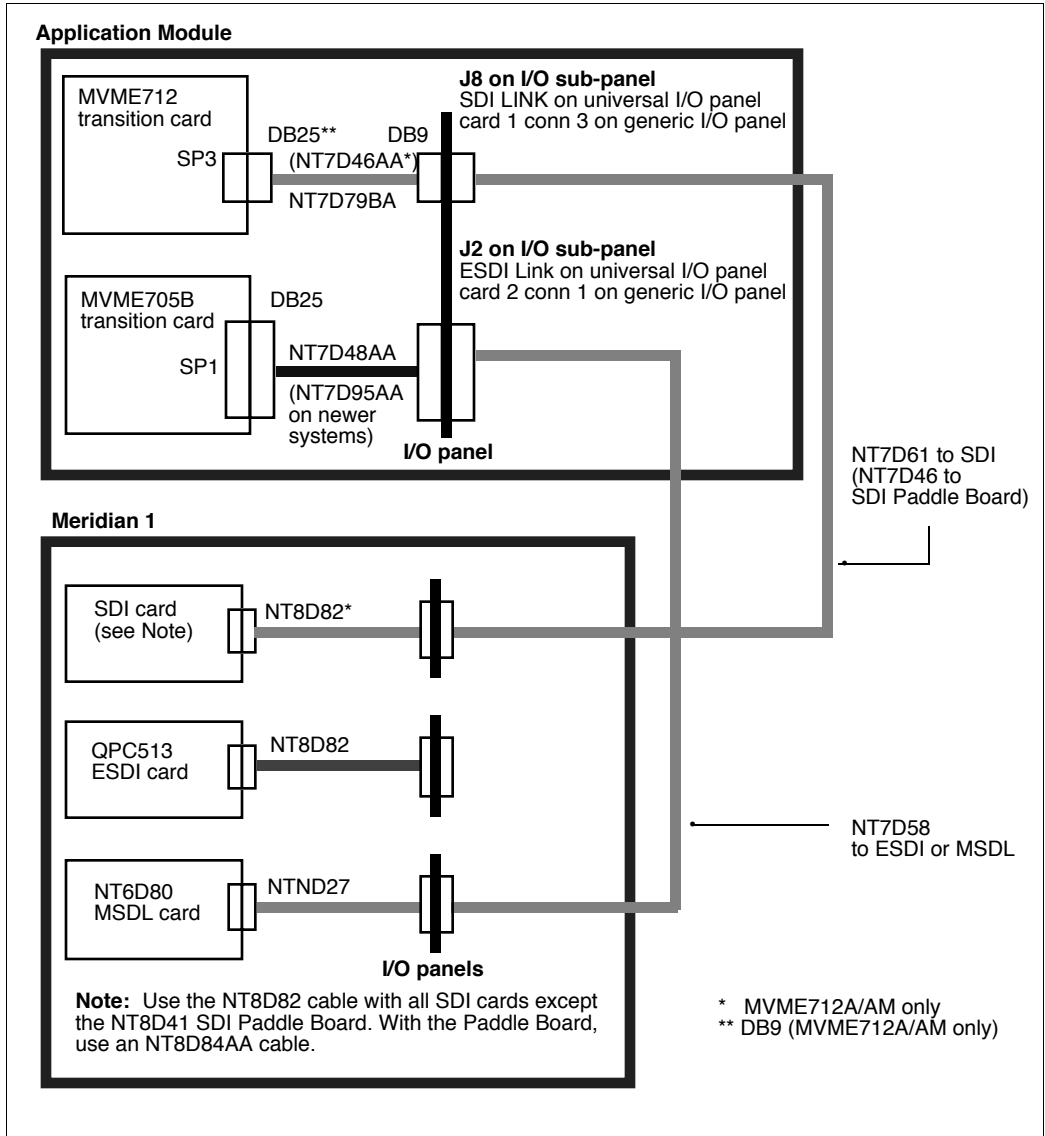
**Figure 72**  
**Application Module external cabling to and from generic I/O panel (CCR)**



**Figure 73**  
**I/O cabling to Meridian 1 (SDI and ESDI) (Application Module)**



**Figure 74**  
**I/O cabling to Meridian 1 (SDI and MSDL) (Application Module)**





**ESDI/MSDL cabling (Application Module)**

As shown in Figure 73, the QPC513 ESDI card in the Meridian 1 connects to the I/O panel in the Meridian 1 through an NT8D82 RS-232 straight-through cable.

As shown in Figure 74, the NT6D80 MSDL card connects to the Meridian 1 I/O panel using an NTND27 SCSI II cable. From the Meridian 1 I/O panel or the ESDI/MSDL on the Meridian 1, an NT7D58 cable connects to the Application Module at

- J2 on the I/O subpanel
- ESDI Link port on the universal I/O panel
- card 2 conn 1 on the generic I/O panel

The NT7D58 cable has 25-pin male connectors at both ends. Table 82 lists the pin assignments required for the cable.

**Table 82**  
**NT7D58 cable pinout**

Meridian 1	Signal	AM (J2)
1	Shield	1
2	TXD	2
3	RXD	3
4	RTS	4
5	CTS	5
6	DSR	6
7	LRTN	7
8	DCD	8
15	STC	15
17	SCR	17
20	DTR	20
24	SCTE	24

**System console cabling (Application Module)**

As shown in Figures 65–74, the system console connects to the MVME712 transition card at

- J7 on the I/O subpanel
- SYS CONS port on the universal I/O panel
- card 1 conn 1 on the generic I/O panel

Use a customer-supplied cable (or an extra NT7D61) with a 9-pin female and 25-pin male connector from the console to the Application Module. Table 83 lists the pin assignments required for the cable.

**Table 83**  
**System console cable pinout**

Meridian 1	Signal	AM (J7) 9-pin connector
2	TXD	3
3	RXD	2
4	RTS	7
5	CTS	8
6	DSR	6
7	LRTN	5
8	DCD	1
20	DTR	4
1	GND	9

## Host computer cabling (Application Module)

### X.25 cabling:

As shown in Figures 65–74, a customer-supplied cable connects

- J3 on the I/O subpanel
- Host on the universal I/O panel
- card 2 conn 2 on the generic I/O panel

to the host computer.

Table 84 describes the pin assignments for this cable.

**Table 84**  
**Host port pinout**

Pin	Signal	Direction	Connection
2	TXD	Input	P2 RXD
3	RXD	Output	P2 TXD
4	RTS	Input	P2 CTS*
5	CTS	Output	P2 RTS*
6	DSR	Output	P2 DTR*
7	GND		P2 GND
8	DCD	Output	+12 V
15	TXCI	Output	P2 TRXC* or open
17	RXCI	Output	P2 TRXC* or open
20	DTR	Input	P2 DSR*
24	TXCO	Input	P2 RTXC*

### TCP/IP cabling:

As shown in Figure 71, an NT7D47EA drop cable connects the Ethernet connector on the generic I/O panel to an Ethernet transceiver. For pinout information of the NT7D47EA cable, refer to Table 94.

**SDI cabling (Application Module)**

As shown in Figures 73 and 74, SDI cards (other than the NT8D41 SDI Paddle Board) connect to the I/O panel in the Meridian 1 through an NT8D82 RS-232 straight-through cable. From the Meridian 1 I/O panel or SDI card on the Meridian 1 I/O panel or SDI card on the Meridian 1, an NT7D61 cable (see Table 81 for lengths and specific codes) connects to the Application Module at

- J8 on the I/O subpanel
- SDI LINK port on the universal I/O panel
- card 1 conn 3 on the generic I/O panel

The NT7D61 cable has a 25-pin male connector for the Meridian 1 and a 9-pin female connector for the Application Module. Table 85 lists the pin assignments required for the cable.

**Table 85**  
**NT7D61 cable pinout**

Meridian 1	Signal	AM (J8)
2	TXD	3
3	RXD	2
4	RTS	7
5	CTS	8
6	DSR	6
7	LRTN	5
8	DCD	1
20	DTR	4
1	GND	9

**SDI Paddle Board cabling (Application Module)**

The NT8D41 SDI Paddle Board connects to the I/O panel in the Meridian 1 through an NT8D84AA cable (see Table 88). From the Meridian 1 I/O panel or SDI Paddle Board on the Meridian 1, an NT7D46 cable (see Table 81 for lengths and specific codes) connects to the Application Module at

- J8 on the I/O subpanel
- SDI LINK port on the universal I/O panel
- card 1 conn 3 on the generic I/O panel

The NT7D46 cable has a 9-pin male connector for the Meridian 1 and a 9-pin female connector for the Application Module. Table 86 lists the pin assignments required for the cable.

**Table 86**  
**NT7D46 cable pinouts**

Meridian 1	Signal	AM (J8)
2	TXD	3
6	RXD	2
4	RTS	7
9	CTS	8
8	DSR	6
3	LRTN	5
1	DCD	1
7	DTR	4

**Table 87**  
**NT8D84AA cable pinout**

10-pin connector	Signal	DB9 connector
2	TXD	2
6	RXD	6
4	RTS	4
9	CTS	9
8	DSR	8
3	LRTN	3
1	DCD	1
7	DTR	7

**Table 88**  
**Pinout of SDI Paddle Board J1 connector**

<b>Pin Number</b>	<b>Signal</b>	<b>Connector</b>	<b>Port</b>
1	CD1	J1	Port 1
2	RD1		
3	TD1		
4	DTR1		
5	GND		
6	DSR1		
7	RTS1		
8	CTS1		

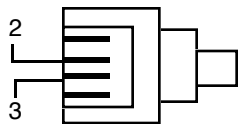
**Table 89**  
**Pinout of SDI Paddle Board J2 connector**

<b>Pin Number</b>	<b>Signal</b>	<b>Connector</b>	<b>Port</b>
1	CD2	J2	Port 2
2	RD2		
3	TD2		
4	DTR2		
5	GND		
6	DSR1		
7	RTS2		
8	CTS2		

**Internal modem cabling (MVME712AM card only)**

The NT7D71BA cable connects the 9-pin connector at either port J9 on the I/O subpanel or the INT MODEM port on the universal I/O panel to the 4-pin connector on the MDF. This cable is used only with the MVME712AM card. Table 90 shows the pin assignments used by this cable.

**Table 90**  
**NT7D71 cable pinout**

AM (9-pin)	Signal	MDF (RJ-11)
2	Tip	 <p>The diagram shows a standard RJ-11 connector with five horizontal contacts. Two lines are drawn from the left to indicate connections: one line connects to the second contact from the left (labeled '2') and another line connects to the third contact from the left (labeled '3').</p>
3	Ring	

**Meridian Mail cabling (Application Module)**

The Meridian Link application can have voice-processing capability by connecting the Application Module to a Meridian Mail system through a link called the Meridian Mail Link (MML).

The MML (Figure 75) connects to the Application Module at MVME712 serial port SP4. The MML connects to the Meridian Mail system at a data port of Meridian Mail.

**Figure 75**  
**Meridian Mail cabling (Application Module)**

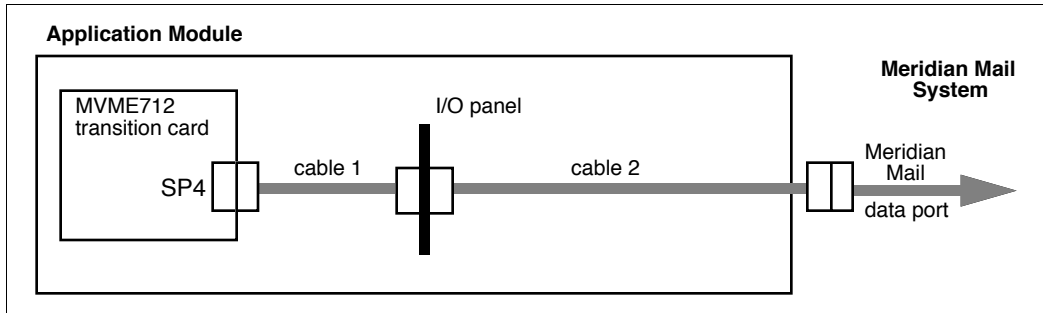


Table 91 shows the different cables that can be used for cable 1 and cable 2 for various combinations of MVME712 transition cards and types of I/O panel.

**Table 91**  
**Meridian Mail cabling**

Transition card	I/O panel type	I/O panel connector	Cable 1 (see Figure 75)	Cable 2 (see Figure 75)
MVME712M	generic I/O	card 1 conn 4	NT7D58CA	NT7D58BB
MVME712A/AM	universal I/O	Spare	NT7D61DA	NTND82AA
MVME712A/AM	I/O subpanel	J1	NT7D61DA	NTND82AA



Meridian Mail Modular Option EC provides data port connections via a utility card. The interface is provided by an NT6P0109 5-port RS-232 or an NT6P0110 4-port RS-232 break-out cable. Each port on these cables has a null modem arrangement, therefore a straight-through cable will be needed to provide a null arrangement interface required by Meridian Link.

### **Adding a connection to Meridian Mail**

The following procedure provides a brief description on how to add voice processing capability to an installed Application Module. Nortel provides kits to enable you to add this capability, and a detailed description will be provided in these kits.

- 1 Power down the Application Module.
- 2 Determine the type of MVME712 transition card installed in your Application Module. Refer to the description of the transition cards earlier in this guide. Briefly, the MVME712M card has four 25-pin connectors, while the MVME712A and AM cards have 9-pin connectors. The MVME712AM card also has an RJ11 connector.
- 3 Determine the type of I/O panel installed in your Application Module. Refer to Figures 27, 28, and 29 for illustrations of the types of I/O panel.
- 4 Using Table 91, determine which cable you will use for cables 1 and 2. For example, if your Application Module has an MVME712AM card and an I/O subpanel, use an NT7D61DA cable as cable 1 and an NTND82AA cable as cable 2.
- 5 Connect cable 1 between serial port SP4 of the MVME712 transition card and the appropriate connector of the I/O panel (refer to Figure 75 and Table 91). For example, if your Application Module has an MVME712AM card and an I/O subpanel, connect an NT7D61DA cable between SP4 and port J1 of the I/O subpanel.
- 6 Connect cable 2 between the connector on the I/O panel and the NT1R03 Meridian Mail cable (the cable that connects to Meridian Mail). For example, if your Application Module has an MVME712AM card and an I/O subpanel, you would connect an NTND82AA cable between port J1 of the I/O subpanel and the NT1R03 cable.

- 7 Power up the Application Module.
- 8 Define the Meridian Mail Link parameters using Procedure 15 in Chapter 15, “Link configuration” in this guide.

**Note:** Return to Chapter 5, “Hardware installation overview” for the next procedure. For more information on Meridian Mail, refer to Chapter 13, “Meridian Mail configuration.”

## Installing Ethernet LAN support

Hardware and software requirements for installing Ethernet LAN support are discussed in the “Ethernet LAN-based PC” section in the Chapter 1, “Meridian Link/CCR co-residency”. However, you should be aware of the following:

- All IPE Modules can provide Ethernet LAN support
- Application Modules can provide Ethernet LAN support only if they have the following:
  - an MVME167-02 SBC card
  - an MVME712M transition card
  - a generic I/O panel
  - an NT7D47DA cable connected between the MVME712M card and the Ethernet port of the generic I/O panel (refer to Table 93 for the pinout of this cable)
  - an NT7D47EA drop cable connected between the Ethernet port of the generic I/O panel and the Ethernet transceiver (refer to Table 94 for the pinout of this cable)

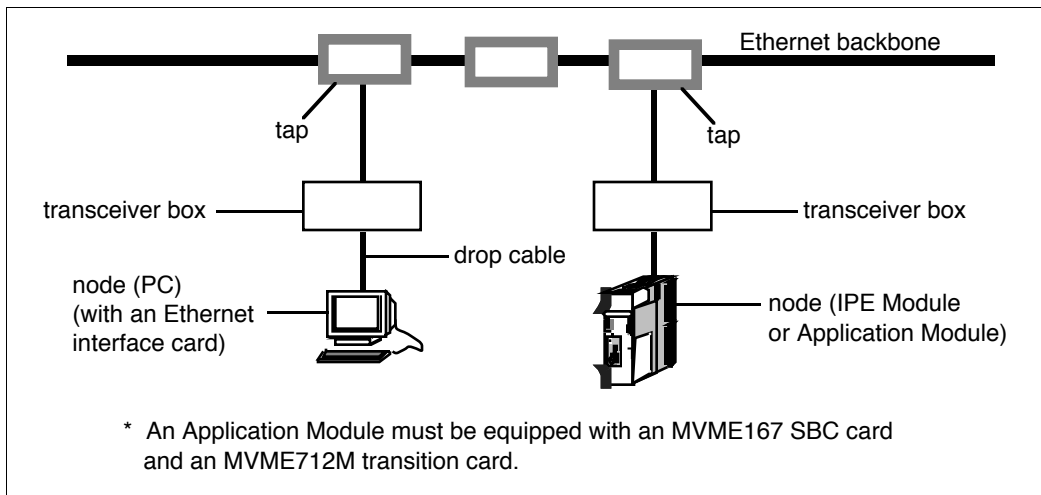
For more information about the NT7D47DA and the NT7D47EA cables, refer to Procedure 28: Installing the cables for Ethernet LAN support (Application Module) in Chapter 17, “Hardware upgrade.”

Before you install Ethernet LAN support on your IPE Module or Application Module, you must ensure that you have the following customer-supplied equipment installed (see Figure 76):

- an Ethernet backbone cable that connects all nodes together (a LAN-attached PC and a LAN-attached host computer are examples of nodes)
- two or more taps attached to the backbone for connecting nodes
- at least one Ethernet transceiver for connecting a node to a tap (multiport transceivers, also called fan-out boxes, connect two or more nodes to a tap)
- two or more nodes, each of which must have an Ethernet transceiver interface in its CPU
- two or more drop cables for connecting nodes to transceivers (or multiport transceivers to taps)

**Note:** IPE Modules and Application Modules have built-in Ethernet interfaces.

**Figure 76**  
**Ethernet backbone terminology (example)**



To set up an Ethernet connection, use the following procedure:

- 1 Ensure that an Ethernet drop cable is connected to the IPE Module or Application Module. Refer to Table 92 for the connection.

**Table 92**  
**Ethernet connections to IPE Module and Application Module**

Module	Ethernet connection
IPE	NT1R03AA cable (Ethernet port)
Application	Ethernet port on the generic I/O panel

- 2 Ensure that an Ethernet drop cable is connected to the LAN-based PC or host computer through the connector on the Ethernet card.
- 3 At the console for the IPE Module or Application Module, perform Procedure 7: Reboot and go through setup in Chapter 14, “Software installation, upgrade, and update procedures.”
- 4 At step 20 of Procedure 7, type **y** and press [Return] to change the system name.
- 5 At step 21 of Procedure 7, type the new name and press [Return].
- 6 When you have completed Procedure 7, perform Procedure 8: Load the application software from tape.
- 7 If you are activating Meridian Link and your host computer is not LAN-based, at step 16 of Procedure 8, type **x** and press [Return] to state that the host link will use an X.25 protocol.  
 If you are activating Meridian Link and your host computer is LAN-based, at step 16 of Procedure 8, press [Return] to indicate that the host link will use the TCP/IP protocol.
- 8 At step 19 of Procedure 8, type **y** and press [Return] to state that your IPE Module or Application Module is connected to Ethernet.
- 9 At step 20 of Procedure 8, type the new module name for the IPE Module or Application Module (set at step 5 above) and press [Return].

- 10** At step 21 of Procedure 8, type the module address of the IPE Module or Application Module and press [Return]. There are specific requirements for the address. For more information, consult your network administrator.

If you are activating support for an Ethernet LAN-based PC, continue with steps 11-13.
- 11** When you have completed Procedure 8, ensure that the Ethernet software has been installed on the LAN-based PC. The software must be installed with VT220 emulation. For more information about Ethernet software, refer to “Ethernet LAN-based PC” in Chapter 1, “Meridian Link/CCR co-residency”.
- 12** At the PC, start a network session to the IPE Module or Application Module using the host name and address from steps 9 and 10 in this procedure. Refer to the documentation for the Ethernet software for the procedure.
- 13** After the network session starts, you will receive a prompt to log in. You can now log in as ccrusr in the usual way to perform CCR user functions. Refer to the CCR User Guide for more information. Or you can log in as maint in the usual way to issue Application Module or link commands. Refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (NTP 553-3211-510) for more information.

**Table 93**  
**NT7D47DA cable pinout**

<b>P1 end</b>	<b>P2 end</b>
1	1
2	2
3	3
5	5
6	6
9	9
10	10
12	12
13	13

**Table 94**  
**NT7D47EA cable pinout**

<b>P1 end</b>	<b>P2 end</b>
1	1
2	2
3	3
5	5
6	6
9	9
10	10
12	12
13	13

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## Chapter 10: Installing peripheral devices

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You should use this chapter in conjunction with Chapter 5, “Hardware installation overview,” which links hardware installation procedures in easily understood tables (Tables 11 and 12).

The following procedures describe how to set up the video display terminals supported by the Meridian Link and CCR applications. If the terminal you are configuring is different from these (but 100 percent compatible with the recommended terminal), use the most similar settings available and follow the instructions in the manual that came with the terminal.

This chapter also contains procedures for configuring personal computers running Reflection 4+ communication software and setting the switches on printers supported by Nortel.

### VT220, VT320, and VT420 terminals

Table 95 contains the setup values for the VT220 terminal. Table 96 contains the setup values for the VT320 terminal. Table 97 contains the setup values for VT420 terminals.



#### **CAUTION**

##### **Risk of potential data loss**

Setup mode can be entered at any time, but it is recommended that you do not do so while information is being printed on the screen.

The setup procedure is the same for all three terminals and is as follows:

- 1 Turn on the terminal.
- 2 Press the [Set-Up] key to enter setup mode.  
The current setup values are displayed on a series of screens.
- 3 Using the following procedures, change the values on each screen to match the values in the appropriate table.  
  
To move to a particular screen from the main setup screen, use the arrow keys to move through the menu of setup screens, and press [Enter].  
  
To move to the next setup screen, use the arrow keys to move to To Next SetUp and press [Enter].  
  
To change the value in a field:
  - Use the arrow keys to move to that field.
  - Press [Enter] to move through the available values for that field.
- 4 When you've finished, press the [Set-Up] key again.

**Note:** Different versions of the VT220, VT320, and VT420 are indicated by the version number at the top right corner of the setup screen. The wording on the setup screens varies slightly from one version to another. Use the values that are closest to the ones shown in the tables.



**Table 95**  
**VT220 Setup values**

<b>Set-Up Directory</b>	
On Line	
<b>Display Set-Up</b>	
80 Columns	Light Text, Dark Screen
Interpret Controls	Cursor
No Auto Wrap	Block Cursor Style
Jump Scroll	
<b>General Set-Up</b>	
VT200 Mode, 8 Bit Controls	Application Keypad
User Defined Keys Unlocked	Normal Cursor Keys
User Features Unlocked	No New Line
Multinational	
<b>Communications Set-Up</b>	
Transmit=9600	1 Stop Bit
Receive=Transmit	No Local Echo
Xoff at 128	EIA Port, Data Leads Only
8 bits, No Parity	Disconnect, 2 s Delay
	Limited Transmit
<b>Printer Set-Up</b>	
Set up according to your printer requirements (if any).	
<b>Keyboard Set-Up</b>	
Typewriter Keys	Warning Bell
Caps Lock	Break
Auto Repeat	No Auto Answerback
No Keyclick	Answerback=
No Margin Bell	Not Concealed
<b>Tab Set-Up</b>	
Leave this screen at the default values.	

**Table 96**  
**VT320 Setup values**

<b>Set-Up Directory</b>	
On Line	
<b>Display Set-Up</b>	
80 Columns	Light Text, Dark Screen
Interpret Controls	Cursor
No Auto Wrap	Block Cursor Style
Jump Scroll	No Status Display
<b>General Set-Up</b>	
VT300 Mode, 8 Bit Controls	Normal Cursor Keys
VT220 ID	No New Line
User Defined Keys Unlocked	UPSS DEC Supplemental
User Features Unlocked	
Application Keypad	
<b>Communications Set-Up</b>	
Transmit=9600	No Local Echo
	DEC-423, Data Leads Only
Receive=Transmit	Limited Transmit
Xoff at 128	No Auto Answerback
8 bits, No Parity	Answerback=
1 Stop Bit	Not Concealed
<b>Printer Set-Up</b>	
Set up according to your printer requirements (if any).	
<b>Keyboard Set-Up</b>	
Caps Lock	Break
Auto Repeat	Compose
No Keyclick	<X] Delete
No Margin Bell	„ and .. Keys
Warning Bell	<> Key
	'~Key
<b>Tab Set-Up Screen</b>	
Leave this screen at the default values.	

**Table 97**  
**VT420 Setup values**

<b>Global Set-Up</b>	
On Line	Comm1=RS-232
Sessions on Comm1	70 Hz
CRT Saver	Printer Shared
<b>Display Set-Up</b>	
80 Columns	No Status Display
Interpret Controls	Cursor Steady
No Auto Wrap	6x24 pages
Jump Scroll	24 Lines/Screen
Dark Screen	Vertical Coupling
Cursor	Page Coupling
Block Cursor Style	Auto Resize Screen
<b>General Set-Up</b>	
VT400 Mode, 8 Bit Controls	Normal Cursor Keys
User Defined Keys Unlocked	No New Line
User Features Unlocked	UPSS DEC Supplemental
8-bit Characters	VT220 ID
Application Keypad	When Available Update
<b>Communications Set-Up</b>	
Transmit=9600	Disconnect, 2 s Delay
Receive=Transmit	Limited Transmit
Xoff at 128	No Auto Answerback
8 bits, No Parity	Answerback=
1 Stop Bit	Not Concealed
No Local Echo	Modem High Speed = ignore
Data Leads Only	Modem Low Speed = ignore
<b>Printer Set-Up</b>	
Set up according to your printer requirements (if any).	
<b>Keyboard Set-Up</b>	
Typewriter Keys	Ignore Alt
Caps Lock	F1 = Hold
Auto Repeat	F2 = Print
Keyclick Off	F3 = Set-Up
Margin Bell Off	F4 = Session
Warning Bell High	F5 = Break
Character Mode	,< and .> Keys
<X] Delete	<> Key
Local Compose	'~Key
<b>Tab Set-Up</b>	
Leave this screen at the default values.	

## Personal computer running Reflection 4+

Reflection 4+ is a customer-supplied communications software package that runs on a personal computer, which can then be used as a terminal for accessing the Meridian Link and CCR applications.

To use Reflection 4+ on a PC, you must first download a configuration file. You need to perform this procedure only once, unless the configuration file is lost or becomes damaged. This procedure assumes that Reflection 4+ software is installed on your PC, and that the PC is connected to the appropriate port on the IPE Module or Application Module.

- 1 Go to the PC directory you wish to use for all future access to the application (for example, the Reflection 4+ software directory).
- 2 Type **r4** and press [Enter] to start up the Reflection 4+ application.  
The default Reflection 4+ configuration file starts up.
- 3 Correct the port, baud rate, and data format information as appropriate for your PC, and press [Enter].  
The "login:" prompt appears.
- 4 Type **trmcnfg** and press [Enter] to log in to the terminal configuration account.
- 5 Type the trmcnfg password (the default password is trmcnfg) and press [Enter].  
The menu shown in Figure 77 appears.

**Figure 77**  
**Downloading the Reflection 4+ configuration file**

Choose a "Reflections" configuration to install:

1. Enhanced keyboard, black background.
2. Enhanced keyboard, blue background.
3. AT keyboard, black background.
4. AT keyboard, blue background.
5. Quit configuration installation.

- 6 Type the number for the appropriate menu option and press [Enter].  
The file is downloaded into the directory on your PC.

- 7 If you need to quit Reflection 4+ (after logging out of the system), press [Alt]+[Ctrl]+[m] to see the Reflection 4+ menu bar. Press <F8> twice.
- 8 To use the configuration file at any time, go to the appropriate directory, type **r4 meridian.cfg**, and press [Enter].

## Meridian Terminal Emulator (MTE 8)

Meridian Terminal Emulator Release 8 allows you to connect to your CCR application from your PC using Microsoft Windows NT or Windows 95.

- 1 Double-click the MTE8 icon.  
The MTE8 window appears.
- 2 On the Settings menu, click Edit Options.
- 3 Select a connection type (COM1, COM2, or LAN)>
- 4 If you are connecting to CCR through a serial port (COM1 or COM2), click either 2400 Baud or 9600 Baud for the connection speed.
- 5 Click CCR.
- 6 If you want to use these values for only the current session, click OK. If you want to save these values and defaults for all future sessions, click Save Options, then click OK.
- 7 Wait until you are connected to CCR.
- 8 If you are prompted for a display type, select VT220.
- 9 Log in to CCR.

For more information on MTE7, refer to the *Meridian Terminal Emulator User Guide, Product Release 8*.

## Dot-matrix printer switch settings

The HP Rugged Writer is a dot-matrix printer. This printer can be configured in HP PCL mode, which provides ISO Latin-1 international support as well as higher-quality graphics, or in Epson mode, which provides faster printing of reports. Table 98 shows the correct DIP switch settings for use with the CCR application.



### CAUTION

#### Risk of hardware damage

Never use pencils or other graphite tools when changing the position of the DIP switches. Flakes of graphite can enter the switch and short-circuit the printer.

**Table 98**  
**Rugged Writer printer switch settings**

Function	Setting	Switch	Switch position
Bank A switches:			
Pitch	10 cpi	1	Down
Default	-8	2	Down
Character set		3	Down
		4	Down
		5	Down
		6	Down
Paper path	z-fold	6	Down
Page length	11 in.	7	Down
Print quality	draft	8	Down
Bank B switches:			
Command set	EPSON	1	Up
	HP PCL	1	Down
RAM allocation	Buffer	2	Down
Perforation skip	Disabled	3	Down
Handshaking	Xon/Xoff	4	Down
Parity	None	5	Down
		6	Down
Baud	9600	7	Down
		8	Down

## LaserJet series II printer switch settings

Use the [Menu] key on the front panel to check and set the options. Press the Menu key to access the first group of settings. Hold the [Menu] key down for about five seconds (the printer is offline) to access the second group of settings. Press the + or – (minus) key until the correct setting appears to change an option. Press [Enter]/[Reset Menu] to save a selection. Press the [Menu] key to continue. Press the [Online] key to exit from the menu.

Table 99 shows the correct option settings for use with CCR.

**Table 99**  
**LaserJet series II printer switch settings**

Press [Menu] key to see the following function	Hold [Menu] key five seconds to see the following setting
COPIES = 01	SYM SET = IBM - US
MANUAL FEED = OFF	AUTO CONT = OFF
FONT SOURCE = 1	I/O = SERIAL
FONT NUMBER = 00	BAUD RATE = 9600
FORM = 066 LINES	ROBUST XON = ON
	DTR POLARITY = HI

## LaserJet series III printer switch settings

Use the [Menu] key on the front panel to check and set the options. Press the [Menu] key to access the first group of settings. Hold the [Menu] key down for about five seconds (the printer is offline) to access the second group of settings. Press the + or – (minus) key until the correct setting appears to change an option. Press [Enter]/[Reset Menu] to save a selection. Press the [Menu] key to continue. Press the [Online] key to exit from the menu.

Table 100 shows the correct option settings for use with CCR.

**Table 100**  
**LaserJet series III printer switch settings**

Press [Menu] key to see the following function	Hold [Menu] key five seconds to see the following setting
COPIES = 01	AUTO CONT = OFF
FONT SOURCE = 1	I/O = SERIAL
FONT NUMBER = 00	SERIAL = RS-232
PAPER = LETTER	BAUD RATE = 9600
ORIENTATION = P	ROBUST XON = ON
FORM = 066 LINES	DTR POLARITY = HI
MANUAL FEED = OFF	RET = DARK
SYM SET = ROMAN 8	PAGEPROTECT = OFF



## LaserJet series IV printer switch settings

Use the [Menu] key on the front panel to check and set the options. Press the [Menu] key to access the first group of settings. Hold the [Menu] key down for about five seconds (the printer is offline) to access the second group of settings. Press the + or – (minus) key until the correct setting appears to change an option. Press [Enter]/[Reset Menu] to save a selection. Press the [Menu] key to continue. Press the [Online] key to exit from the menu.

Table 101 shows the correct option settings for use with CCR.

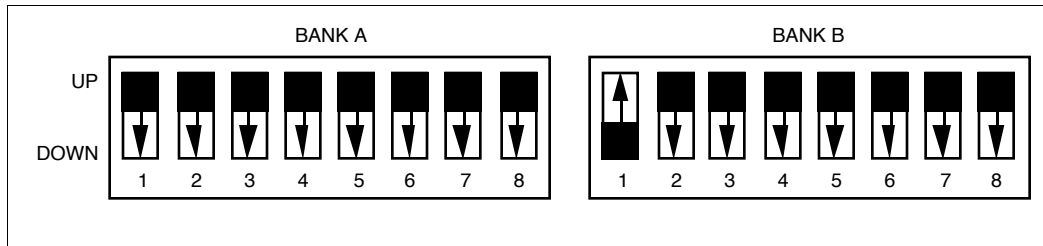
**Table 101**  
**LaserJet series IV printer switch settings**

<b>Press [Menu] key to see the Printing Menu</b>	<b>Press [Menu] key once to see the PCL Menu</b>
COPIES = 01 PAPER = LETTER ORIENTATION = P FORM = 66 MANUAL FEED = OFF RET = DARK	FONT SOURCE = 1 FONT NUMBER = 45 SYM SET = ISO L1 PAGEPROTECT = OFF RESOLUTION = 300 TIMEOUT = 15
<b>Press [Menu] key twice to see the Configuration Menu</b>	<b>Press [Menu] key three times to see the Printing Menu</b>
MP TRAY = CLASS LOCK = NONE CLR WARN = ON AUTO CONT = ON DENSITY = 3 LOW TONER = ON	SERIAL = RS-232 PACING = XON/XOFF BAUD RATE = 9600 ROBUST XON = ON DTR POLARITY = HI

## DeskJet and DeskJet 500 printer switch settings

The DeskJet and DeskJet 500 are inkjet printers. Figure 78 shows each printer's correct switch settings for use with CCR (the arrows point in the direction you should move the switch handle).

**Figure 78**  
**DeskJet and DeskJet 500 printer switch settings**



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# Chapter 11: Peripheral device cabling interface

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You should use this chapter in conjunction with Chapter 5, “Hardware installation overview,” which links hardware installation procedures in easily understood tables (Tables 11 and 12).

This chapter provides information pertaining to special installing and configuration requirements.

## DCE and DTE connections

The RS-232C protocol is widely used as a physical interface between external devices. An RS-232 link will safely carry data signals up to 15 m (50 ft.) with no special equipment installed—if it is set up correctly for the device at each end. Each device is designated as either Data Terminal Equipment (DTE; usually a terminal or host computer) or Data Communications Equipment (DCE; often a modem). Normally, to establish communications between two devices, one device must be DCE and the other device must be DTE, with an RS-232 cable between them.

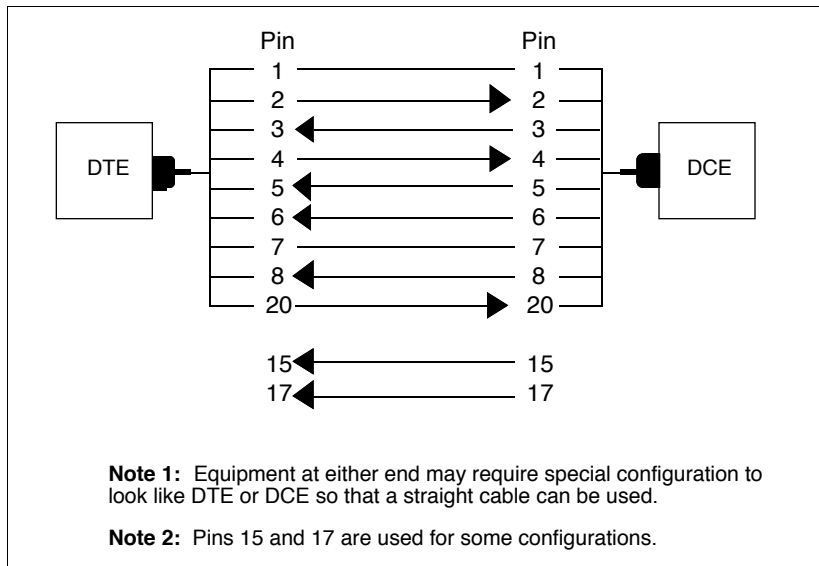
The RS-232 cable has as many as 25 pins, each carrying a specific type of data signal. A straight RS-232 link connects a DTE device to a DCE device. However, some connections link devices of the same type—for example, a printer could be attached to a terminal (DTE-to-DTE). There are two approaches to handling such non-standard connections. They include

- ***reconfiguring the device at one end of the link*** Many devices can be configured to resemble a DTE or DCE device, usually by setting switches or jumpers on the equipment or by changing the software configuration. A straight cable can then be used, as shown in Figure 79.

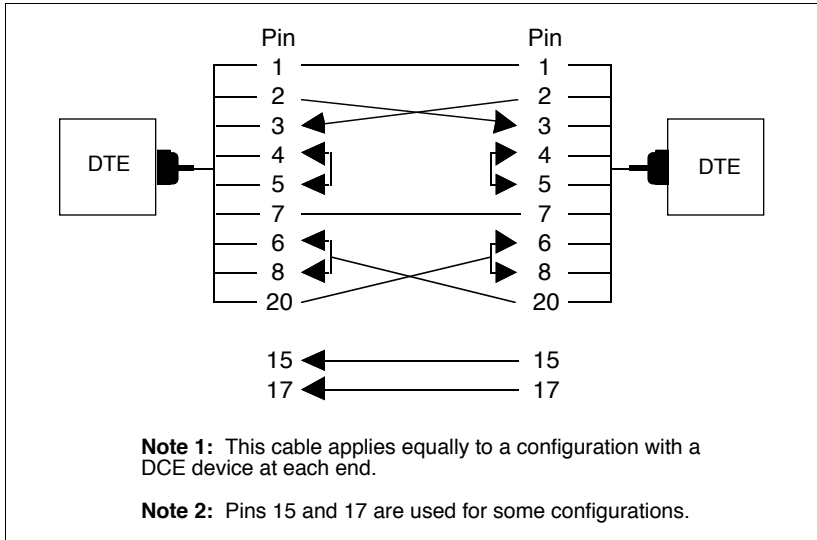
- using a null-modem cable** A null-modem cable (a special cable, or a cable with an adapter) crosses certain RS-232 data signals so that a DTE-to-DTE or DCE-to-DCE connection behaves like a standard DCE-to-DTE connection. A null-modem cable is shown in Figure 80.

Note that null-modem cables and connectors are commonly used in asynchronous connections (to terminals or modems, for example) but cannot always be used in synchronous connections (to the Host or AML). In particular, DTE-to-DTE synchronous connections cannot normally be used because the DCE side supplies the clock signal, so that in a DTE-to-DTE connection, no clock signal would be available. Likewise, DCE-to-DCE connections may or may not work in synchronous mode because each side thinks it controls the clock signal. Also, the port hardware implementation may not allow a DTE-to-DCE crossover connection.

**Figure 79**  
**Straight RS-232 cable**



**Figure 80**  
**Null modem RS-232 cable**



The ports on the IPE Module can be configured as DCE or DTE using connectors on the CPU adapter card. (For more information, refer to “Installing the IPE Module” in Chapter 8, “Hardware installation procedures.”)

## Using an A/B switchbox to share system consoles

You can use a single terminal as a system console for more than one application if you use an A/B switchbox. Follow the installation procedure below to install the NT3M50AD (A0345353) and similar A/B switchboxes.

*Note:* Using an A/B switchbox to switch a console from one module (either an IPE Module or an Application Module) to another may cause system error messages to be lost. If the console is switched to one module, any system error messages sent to the console from the other module will be lost. For example, if Module A were to report SCSI failure as a system console message while the A/B switch was set to Module B, Module A's messages would be lost.

### Connecting the A/B switchbox

- 1 Place the A/B switchbox in a suitable location near the IPE Module or Application Module.
- 2 For the IPE Module: Plug one end of an NT1R03DB cable into the port 1 connector of the NT1R03AA cable.  
  
For the Application Module: Plug one end of the 9-pin-to-25-pin cable (or extra NT7D61 cable) into the Application Module (J7 on the I/O subpanel, SYS CONS on the universal I/O panel or card 1 conn 1 of the generic I/O panel) for your application.
- 3 Plug the other end of the cable into the connector marked "A" on the rear of the A/B switchbox and secure it.
- 4 Repeat steps 2 and 3 for the second application, using the "B" connector on the A/B switchbox.
- 5 Label the front of the A/B switchbox to indicate which application is connected to each port.
- 6 Install a straight RS-232 cable between the "C" connector on the rear of the A/B switchbox and the terminal.

## Using the A/B switchbox to switch applications

- 1 Log out of any administration, maintenance, or application function on the system console.  
The “Console Login:” prompt appears.
- 2 Use the switch at the front of the A/B switchbox to select the other application.
- 3 Press [Return] to see the “Console Login:” prompt.
- 4 If your terminal is a PC running Reflection 4+, download the keyboard mapping file.  
See Chapter 10, “Installing peripheral devices” in this guide for further information on downloading this file.

## Modems

Modems are used to connect peripheral devices (terminals and printers) to the IPE Module or the Application Module over long distances. Modems are always DCE.

### Limited-distance modem

If a peripheral device is to be installed more than 15 m (50 ft) away from the IPE Module or the Application Module, you will need to use a self-powered limited-distance modem. The added range depends on the modem you obtain. Limited-distance modems are recommended for use inside buildings only. Nortel neither supplies nor recommends a particular make or model of modem for this purpose. If diagnostic activities indicate that problems exist with the modem, Nortel support personnel will recommend that the customer call in service representatives for the modem equipment.

The following standards should be used when selecting a limited-distance modem:

- 9600 bps
- 8 bits, no parity, 1 stop bit



## USRobotics Sportster modem

The USRobotics Sportster (14.4) modem allows you to extend the distance between the IPE Module or the Application Module and any connected peripheral equipment.

The switch settings are shown in the following table.

**Table 102**  
**USRobotics Sportster switch settings**

Switch setting	Position	Description
1	Up	DTR Normal
2	Up	Verbal result codes
3	Down	Display result codes
4	Up	Echo offline commands
5	Up	Auto answer
6	Up	Carrier detect normal
7	Down	Load factory defaults
8	Down	Smart mode

**Note:** When dialing up the system, you may need to send several <BREAK> commands from your remote end to the system in order to bring up the login prompt. The system's baud rate may be different from the modem baud rate therefore sending the <BREAK> command causes the system to cycle through various baud rates. When the system reaches the correct baud rate, you will see the login prompt on your remote screen.

## **Gandalf LDS 120E limited-distance modem**

The Gandalf LDS 120E limited-distance modem allows you to extend the distance between the IPE Module or the Application Module and any connected peripheral up to a nominal distance of 8 km (5 miles). Figure 81 illustrates the hardware configuration required to use the Gandalf LDS 120E modem.

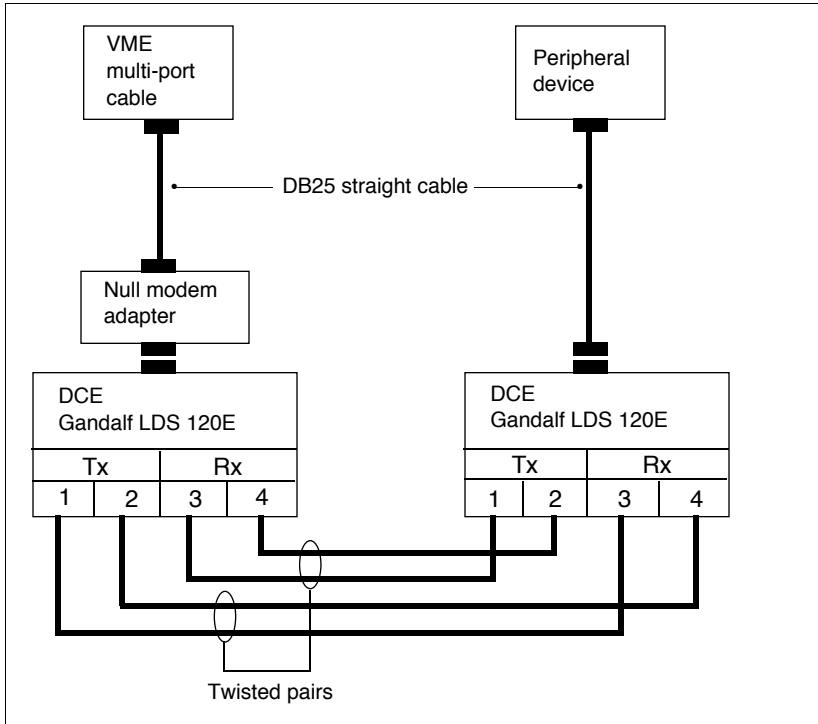
Ensure that the jumper options match the settings shown in Figure 82. The switch on the back of the modem should be set to the “normal” position.

### **Connecting the Gandalf LDS 120E modem to the IPE Module or the Application Module**

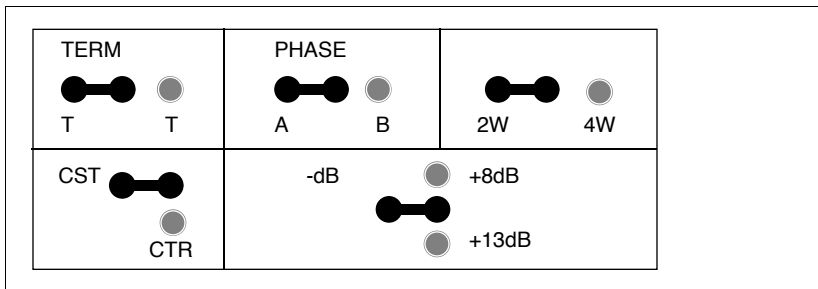
- 1 Connect the DB25 connector from the IPE Module or the Application Module port to a null-modem adapter.
- 2 Connect the null-modem adapter to the female DB25 socket on the first Gandalf LDS 120E modem.
- 3 Connect the first Gandalf LDS 120E modem to the second modem with 2-pair twisted cable (24 AWG). This cable cannot exceed 8 km (5 miles).
- 4 Connect the second Gandalf LDS 120E modem to the peripheral device using a straight DB25 cable.
- 5 Once the modems are connected, turn on the power and ensure that the DCD lamp on each modem comes on.

This lamp indicates that each Gandalf LDS 120E modem is active.

**Figure 81**  
**Hardware configuration using a Gandalf LDS 120E limited-distance modem**



**Figure 82**  
**Gandalf LDS 120E limited-distance modem—jumper option settings**



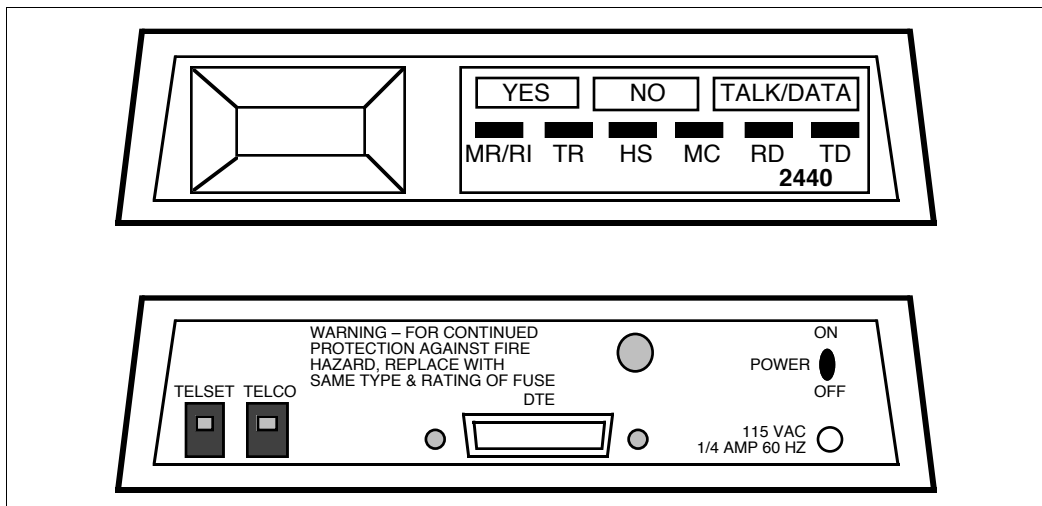
### Dial-up modem

If you want to dial up to ports on the IPE Module or the Application Module, you can use any one of five modems: Universal Data Systems (UDS) 2440 A/D modem, EC224 A/D modem, Ven-Tel 2400 baud modem, Ven-Tel 2400 Plus II baud modem, and Ven-Tel 9600 plus baud modem. The following pages show the locations and settings of the switches on these modems.

It is important to note that regardless of which modem you select, the identical model of modem must exist at both ends for dial-up capability to work properly. For example, if the remote terminal or printer has a UDS EC224 A/D modem, the modem at the IPE Module or Application Module site must also be a UDS EC224 A/D modem.

All of these modems (at the Application Module site) are connected to a VME multi-port cable. Attach one VME multi-port receptacle, or (at the IPE Module site) the appropriate port on the NT1R03AA or NT1R03BA cable, to a null-modem adapter, then connect the adapter to the DB25 socket on the modem. At the device end, connect the terminal or printer to the modem using a straight DB25 cable.

**Figure 83**  
**Universal Data Systems (UDS) 2440 A/D modem—front and rear view**



### **Configuring the UDS 2440 modem for remote diagnostics**

There are two ways to configure the UDS 2440 modem for remote diagnostics: one procedure uses the modem's front panel buttons, while the alternative procedure allows for configuration via a workstation. Both procedures are outlined below.

The following procedure explains how to configure the UDS 2440 modem via the front panel buttons on the modem.

- 1** Connect the modem to a power source next to the system.
- 2** Position the power switch on the rear panel of the modem to ON.  
The LCD on the front panel will display the following: ####-## (for example, 3050-5C, appears for two seconds).
- 3** Answer the prompts by pressing either the YES or the NO button on the front of the modem panel. Each response will appear in the LCD window. Table 103 lists the prompts and responses.

**Note:** If you press the wrong button, press the TALK/DATA button followed by the NO button. This returns you to step 2.

**Table 103**  
**UDS 2440 modem configuration (front panel buttons)**

Prompt	Response
OFFLINE	NO
DIAL?	NO
TEST	NO
AUTO ANS?	NO
DATA OPTS?	NO
OPTIONS?	YES
RESET?	YES
LOADING (appears for one second)	
RESET?	NO
FACTORY?	YES
FACTORY 0?	YES
LOADING (appears for one second)	
FACTORY?	NO
SPKR OPTS?	NO
TELE OPTS?	NO
PIN OPTS?	NO
MSG OPTS?	NO
SECURITY?	NO
DISC OPTS?	NO
SREGS?	NO
OPTIONS?	NO
PROTOCOL?	NO
If SAVE? appears	YES
SAVING (appears for two seconds)	
— continued —	

**Table 103**  
**UDS 2440 modem configuration (front panel buttons) (continued)**

Prompt	Response
OFFLINE?	NO
DIAL?	NO
TEST?	NO
AUTO ANS?	YES
AUTO ANS E?	YES
RINGS?	YES
RING = 001?	YES
AUTO ANS?	NO
DATA OPTS?	NO
OPTIONS?	YES
RESET?	NO
FACTORY?	NO
SPKR OPTS?	NO
TELE OPTS	NO
PIN OPTS?	YES
DTR OPTS?	YES
DTR OPTS 0?	NO
dtr opt 1	NO
dtr opt 2	NO
dtr opt 3	YES
DTR OPTS?	NO
DSR OPTS?	YES
DSR FORCED?	NO
DSR normal	YES
— continued —	

**Table 103**  
**UDS 2440 modem configuration (front panel buttons) (continued)**

Prompt	Response
DSR OPTS?	NO
CD OPTS?	YES
CD FORCED?	NO
lo at disc	NO
cd normal	YES
CD OPTS?	NO
CTS OPTS?	NO
P 21 OPTS?	NO
P 23 OPTS?	NO
P 25 OPTS?	NO
PIN OPTS?	NO
MSG OPTS?	NO
SECURITY?	NO
DISC OPTS?	NO
SREGS?	NO
OPTIONS?	NO
PROTOCOL?	NO
SAVE?	YES
SAVING (appears for two seconds)	
OFFLINE	
— end —	



- 4 Connect the modem directly to the IPE Module or Application Module, as described in Chapter 9, “Meridian Link/CCR interface cabling.”

If the modem installation is successful, the LED labelled “TR” on the front panel of the modem lights up.

The following procedure explains how to configure the UDS 2440 modem using a workstation.

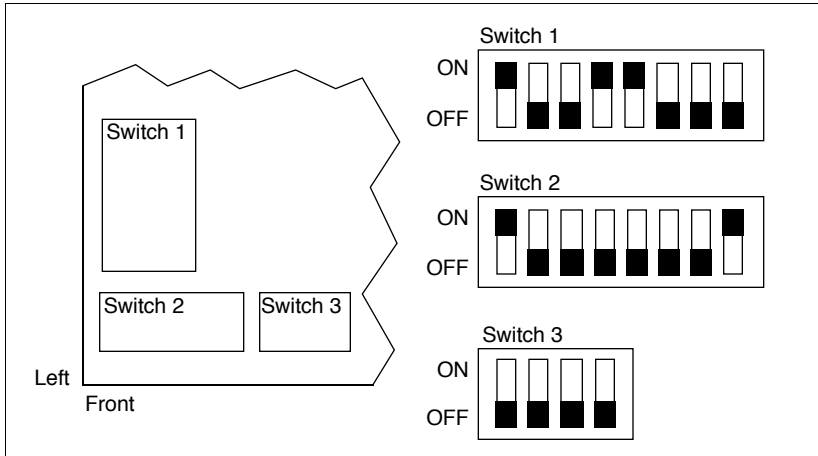
- 1 Connect the modem to a workstation and apply power to both.
- 2 Enter each entry shown under the “Input” column in Table 104 and press [Enter]. The system response to each entry should be “OK.”

**Table 104**  
**UDS 2440 modem configuration (workstation)**

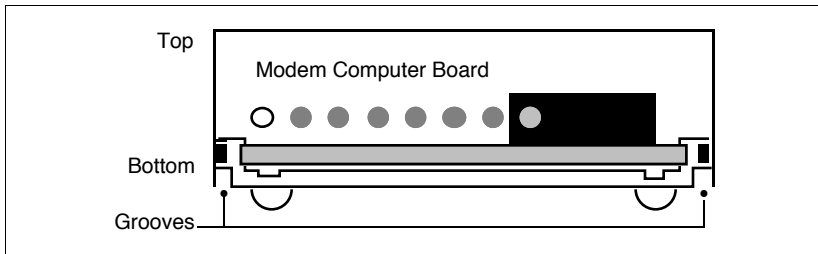
Input	System response
atz	OK
at&f	OK
ats0=1	OK
at&d3	OK
at&s1	OK
at&c1	OK
at&w	OK

- 3 Power down the workstation and the modem.
- 4 Disconnect the modem from the workstation.
- 5 Connect the modem to the IPE Module using an NT1R03HF cable, or to an Application Module using an NT7D99AA cable.  
  
If the modem installation is successful, the LED labelled “TR” on the front panel of the modem lights up.

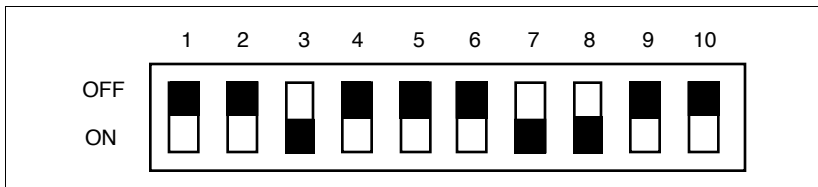
**Figure 84**  
**Universal Data Systems (UDS) EC224A/D modem—switch locations and settings**



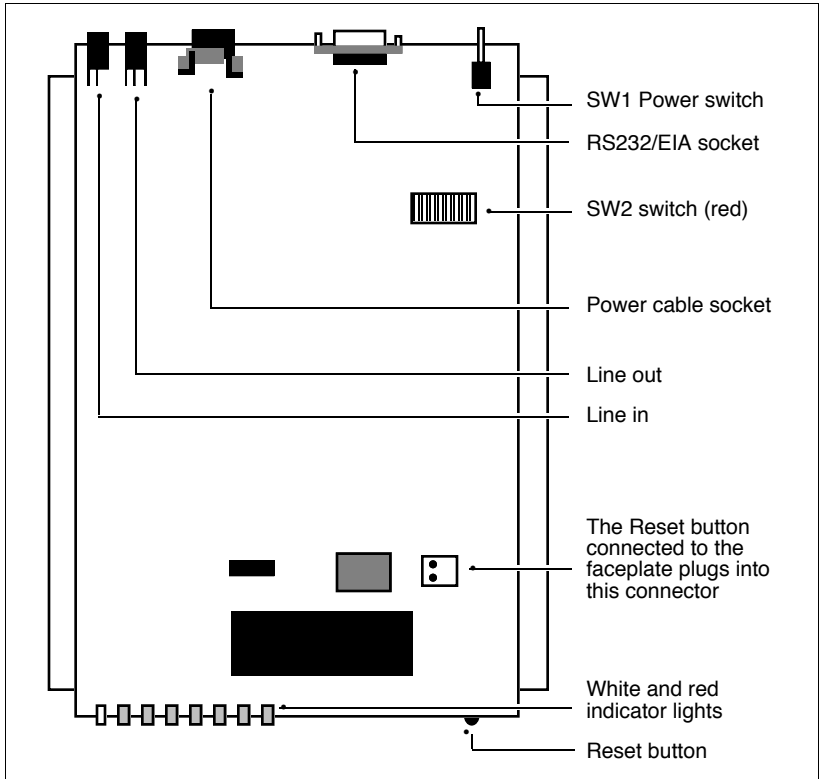
**Figure 85**  
**Ven-Tel 2400 modem—opening the modem**



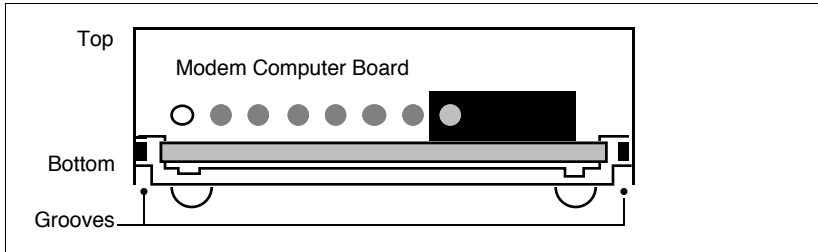
**Figure 86**  
**Ven-Tel 2400 modem SW2 switch settings**



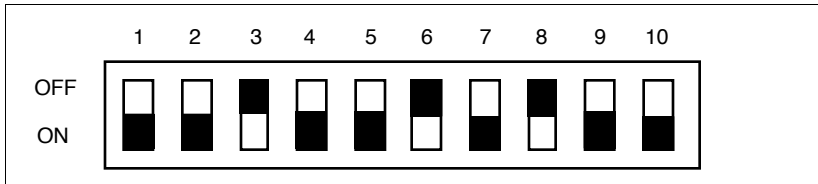
**Figure 87**  
**Ven-Tel 2400 modem—switch locations**



**Figure 88**  
**Ven-Tel 2400 Plus II modem—opening the modem**



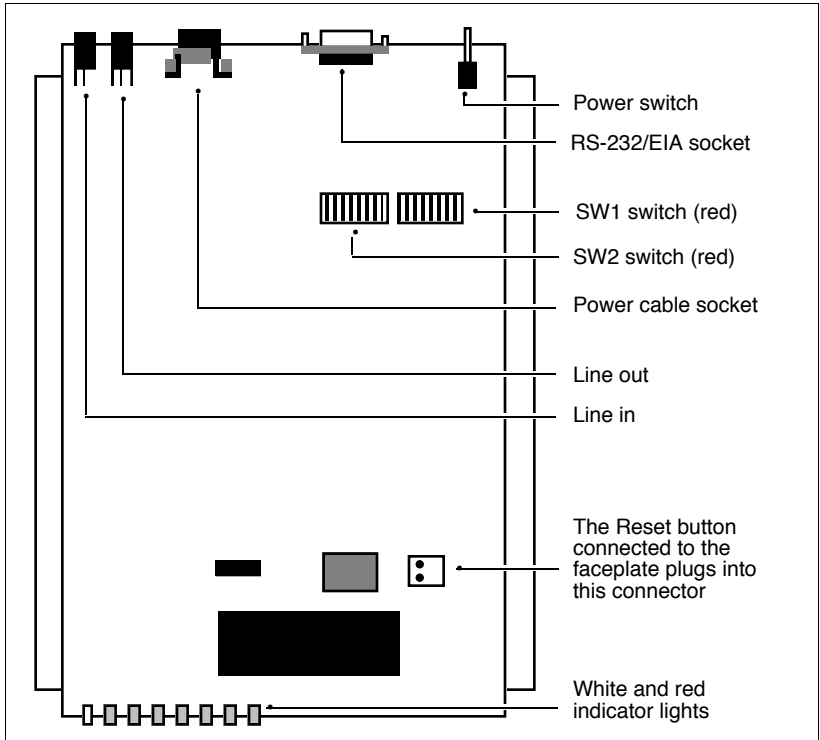
**Figure 89**  
**Ven-Tel 2400 Plus II modem switch settings**



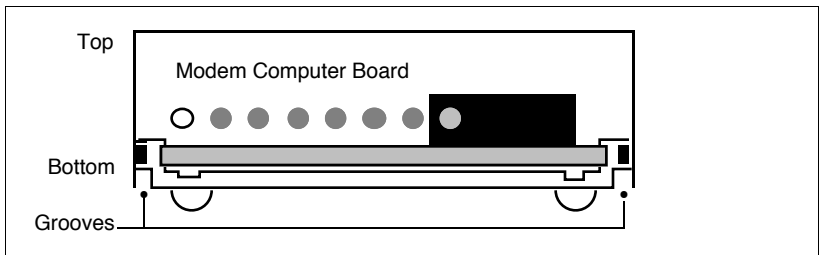
The indicators on the front panel of the Ven-Tel 2400 and 2400 Plus II modems are labelled. The meanings of the labels are as follows:

- HS — High speed
- AA — Auto answer mode
- CD — Carrier detect
- OH — Off hook
- RD — Receive data
- SD — Send data
- TR — Terminal ready
- MR/EC — Modem ready/error corrected

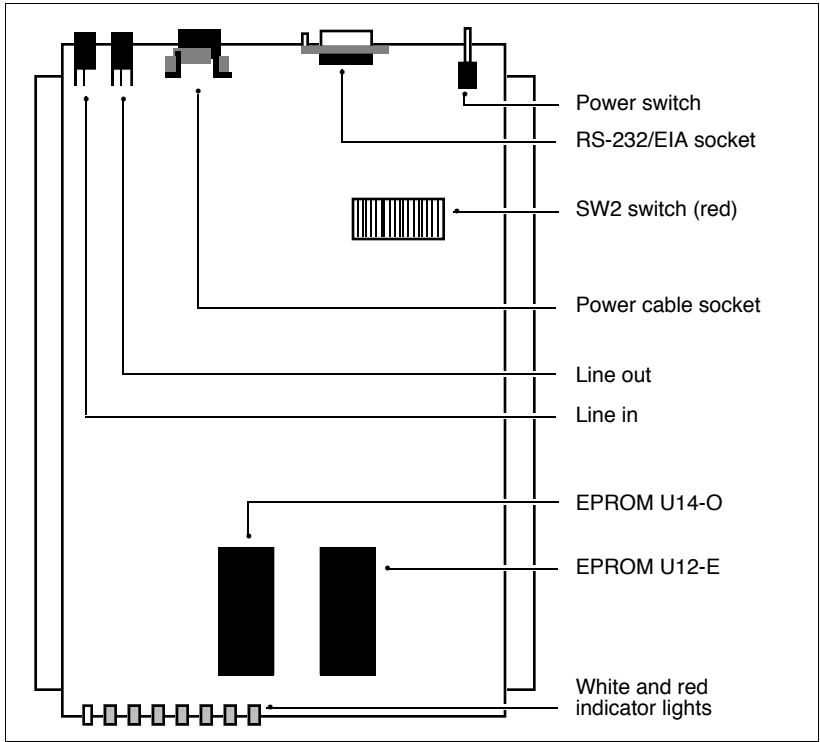
**Figure 90**  
**Ven-Tel 2400 Plus II modem—switch locations**



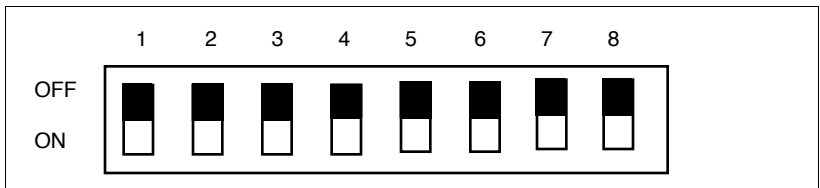
**Figure 91**  
**Ven-Tel 9600 Plus modem—opening the modem**



**Figure 92**  
**Ven-Tel 9600 Plus modem—switch locations and settings**



**Figure 93**  
**Dial-up modem—Ven-Tel 9600 Plus modem SW2 switch settings**



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## Chapter 12: Meridian 1 configuration for Meridian Link/CCR

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You should use this chapter in conjunction with Chapter 5, “Hardware installation overview,” which links hardware installation procedures in easily understood tables (Tables 11 and 12).

This chapter shows how to use various software programs to configure the Meridian 1 to support Meridian Link and CCR. See the *X11 Input/Output Guide* (NTP 553-3001-400) for more information on these programs.

**Note:** The information in this chapter is based on X11 Release 17 and later software on Meridian 1. X81 International Phase 7 is supported, but some prompts may look a little different.

### Conventional notation

This chapter contains the following conventional notations:

- Default values are shown in parentheses and are defined using the carriage return, noted as “<cr>.”

Example:

K	1-(7)	Maximum number of outstanding frames
LTHR	<cr>	

- Input/output (I/O) information is shown in uppercase.
- Variables are shown in lowercase, or as a range of variables.

Table 105 presents some of these conventions.

**Table 105**  
**Standard notation for X11 software administration**

<b>Notation</b>	<b>Explanation</b>
aaa	Text string
loop	Network loop number (0–159)
l s c u	Loop, shelf, card, unit for a terminal number (TN)
<cr>	Carriage return
xxx	Numeric value, like a directory number (DN) or device identifier
xxx . . . x	Numeric value, a large number
x-(xx)-xxx	Numeric value, a range with a default value in parentheses



## Configuration overview

Install or upgrade the Meridian 1 to the appropriate software release (see Chapter 2, “Overview of Meridian Link” or Chapter 3, “Overview of Customer Controlled Routing”). To upgrade an existing system, refer to *Software Conversion Procedures* (NTP 553-2001-320).

### Summary of Meridian 1 configuration

- 1 Define the ESDI/MSDL, STA, and SDI ports in the Configuration Record (LD 17).  
Ensure that you refer to the prompts for your release of X11 software (either Release 17 or later).
- 2 Identify VASID and define the status message groups in LD 15.
- 3 Define ACD groups and agents in Automatic Call Distribution (LD 23) if required for the application.
- 4 Configure single-line telephones with the Associated Set (AST) and Unsolicited Status Messages (USM) features in Single-Line Telephone Administration (LD 10).
- 5 Configure multi-line telephones with the AST and USM features in Multi-Line Telephone Administration (LD 11).
- 6 Configure Control DN (CDNs) in LD 23 if required for Host Enhanced Routing.
- 7 Enable the ESDI/MSDL port in Link Diagnostic (LD 48).
- 8 Enable the SDI port for console sharing in Input/Output Diagnostic (LD 37).

## Configuring the VSID, HSID, and AML prompts

When you are configuring the Meridian 1, you will encounter the VSID, HSID, and AML prompts in LD17, LD15 and LD23. If you are adding Meridian Link or CCR to an IPE Module or an Application Module to create a co-resident system, you should understand what these prompts mean to avoid confusion.

A Value-Added Service Identifier (VAS ID) is a number ranging from 0 through 15 that identifies a link as an Application Module Link (AML). A Meridian 1 system with a single IPE Module or Application Module, used for Meridian Link or CCR or both, has only one AML and so requires only one VAS ID. A Meridian 1 system with two modules (two Application Modules, two IPE Modules, or one of each), with Meridian Link activated in one module and CCR activated in another, requires two AMLs, and so requires two different VAS IDs. The system with two modules requires the Host Service Identifier (HSID) to identify the AML that is connected to the module that has Meridian Link activated.

The following four examples describe how the prompts are used.

- A Meridian 1 with a single IPE Module or Application Module with either Meridian Link or CCR (but not both) activated:
  - ***VSID prompt (LD17)*** Enter a value to define the VAS ID to be associated with the AML.
  - ***AML prompt (LD17)*** Enter the ESDI or MSDL port number to be associated with the VAS ID.
  - ***VSID prompt (LD15)*** Enter the value from the VSID prompt in LD17.
  - ***VSID prompt (LD23)*** Enter the value from the VSID prompt in LD17.
  - ***HSID prompt (LD23)*** Do not enter a value.

- A Meridian 1 with two modules (two Application Modules, or two IPE Modules, or one of each), one module with Meridian Link but not CCR activated, one module with CCR but not Meridian Link activated:
  - **VSID prompt (LD17)** Use two VSID prompts to enter values to define two different VAS IDs to be associated with the two AMLs.
  - **AML prompt (LD17)** Use two AML prompts to enter two ESDI or MSDL port numbers to be associated with the two VAS IDs.
  - **VSID prompt (LD15)** Enter the value from the VSID prompt in LD17 associated with the AML connected to the module with Meridian Link activated.
  - **VSID prompt (LD23)** Enter the value from the VSID prompt in LD17 associated with the AML connected to the module with CCR activated.
  - **HSID prompt (LD23)** Enter the value from the VSID prompt in LD17 associated with the AML connected to the module with Meridian Link activated.
  
- A Meridian 1 with a single IPE Module or Application Module with both Meridian Link and CCR activated:
  - **VSID prompt (LD17)** Enter a value to define the VAS ID to be associated with the AML.
  - **AML prompt (LD17)** Enter the ESDI or MSDL port number to be associated with the VAS ID.
  - **VSID prompt (LD15)** Enter the value from the VSID prompt in LD17.
  - **VSID prompt (LD23)** Enter the value from the VSID prompt in LD17.
  - **HSID prompt (LD23)** Do not enter a value.

- A Meridian 1 with a single IPE Module or Application Module active and a redundant Meridian Link (another IPE Module or Application Module on warm standby mode):
  - **VSID prompt (LD17)** Enter a value to define the VAS ID to be associated with the AML.
  - **AML prompt (LD17)** Enter the first ESDI or MSDL port number to be associated with the VAS ID.
  - **AML prompt (LD17)** Enter the second ESDI or MSDL port number to be associated with the VAS ID.
  - **VSID prompt (LD15)** Enter the value from the VSID prompt in LD17.
  - **VSID prompt (LD23)** Enter the value from the VSID prompt in LD17.
  - **HSID prompt (LD23)** Do not enter a value.

If you have a system with a single IPE Module or Application Module and you want to add either Meridian Link or CCR to create a co-resident system, you do not need to change the values entered at the VSID, HSID, or AML prompts.

If you have a system with two modules, one of which has Meridian Link (but not CCR) activated, the other of which has CCR (but not Meridian Link) activated, and you want to create a co-resident system by removing one module and activating both applications on the remaining module, you must make changes to the values entered at the VSID, HSID, and AML prompts. You should choose a configuration that requires the fewest changes.

## Configure ESDI port (X11 Release 17)

The IPE Module or Application Module is connected to the Meridian 1 through a port on a QPC513 ESDI card (vintage G or later) or an NTAK02 SDI/DCH card (Option 11, IPE Module only). The port must have the AML identified (VSID 0–15). Define the ESDI port and its characteristics by responding to the following prompts in LD 17.

### Options 21–81 ESDI configuration

**Table 106**  
**LD 17—Configure ESDI port (Options 21–81)**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
PWD2	<cr>	
ISDN	<cr>	
PARM	YES	Change a parameter
NCR	26–2047, 5000	Increment the current value by the value used for CSQI and CSQO. See those prompts described later in this table.  <b>Note:</b> The Meridian 1 must be reinitialized if NCR is changed.
CEQU	<cr>	
OVLY	<cr>	
IOTB	YES	Change I/O terminals or devices
HIST	<cr>	
ADAN	NEW TTY x	Add ESDI on port x
ESDI	YES	Port is on an ESDI card
SYNC	YES	Synchronous mode
<b>—continued—</b>		

**Table 106**  
**LD 17—Configure ESDI port (Options 21–81) (continued)**

Prompt	Response	Comment
DUPX	FULL	Full duplex mode
BPS	19200	19,200 bps baud rate (19.2 kbps). (The baud rate for link 0 of the Application Module must also be set to 19,200 bps.)
CLOK	INT	Internal clock
IADR	3	Internal address for AML LAPB
RADR	1	Remote address for AML LAPB
LCTL	YES	Modify link control parameters
T1	4	Layer 2 retransmission timer in units of 0.5 seconds
T2	0	Layer 2 acknowledge timer in units of 0.5 seconds
T3	10	Layer 2 link set-up timer in units of 0.5 seconds (only for ESDI)
N1	128	Maximum I frame length in octet
N2	8	Maximum number of Layer 2 retransmission
K	1–(7)	Maximum number of outstanding frames  <b>Note:</b> This number must match the value set for Link 0 on the Meridian Link.
LTHR	<cr>	
USER	CMS	ESDI port is a Command and Status link
ADAN	<cr>	
VAS	NEW	Value Added Server Identifier (VAS ID)
VSID	0–15	VAS (AML) identifier
DLOP	<cr>	
<b>— continued —</b>		

**Table 106**  
**LD 17—Configure ESDI port (Options 21–81) (continued)**

Prompt	Response	Comment
CMS	x	ESDI port number for this AML. This must be the same as the port number defined at the ADAN prompt.
SECU	YES	Security for AML. Must be set to Yes.
INTL	4	Time interval (five-second increments) used to determine overload conditions
MCNT	400	Message count threshold for number of messages per time interval (from INTL)
CONF	DIR	Direct link for this AML configuration
CMS	<cr>	ESDI port number for CSL (0–15)
VSID	<cr>	
VAS	<cr>	
CSQI	(20)–255	Maximum call registers for AML input queues
CSQO	(20)–255	Maximum call registers for AML output queues
		Set CSQI and CSQO equal to the number of ACD agents or AST sets, or 50 whichever is larger, but not more than 25 percent of the total number of call registers (NCR prompt).
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	END	Either change more configuration data or exit the overlay, saving changes to the configuration record.
— end —		

## Enable ESDI port (X81 phase 7 or X11 Release 17)

Commands in LD 48 require a port or link parameter, which is indicated in the prompts as xx. Substitute the appropriate port or link number when using the prompts listed below.

**Table 107**  
**LD 48—Link Diagnostic**

Command	Comment
ACMS xx	Enable and start the ESDI link on port xx
<b>The following commands may be used for diagnostic purposes:</b>	
CON ESDI xx	Configure link layer for ESDI port xx using HDLC protocol
DIS ESDI xx	Disable ESDI on port xx
DIS MSGI xx	Turn off link monitoring for incoming messages on link xx
DIS MSGO xx	Turn off link monitoring for outgoing messages on link xx
DSC ESDI xx	Disconnect the link to ESDI on port xx
ENL ESDI xx	Enable ESDI on port xx
ENL MSGI xx	Turn on link monitoring for incoming messages on link xx
ENL MSGO xx	Turn on link monitoring for outgoing messages on link xx
ENXP MSGO xx yy	Exclude polling on link xx for outgoing messages with priority levels yy
ENXP MSGI xx yy	Exclude polling on link xx for incoming messages with priority levels yy
ENL MSGI/MSGO xx	Enable message input/output monitoring (xx=link)
—continued—	



**Table 107**  
**LD 48—Link Diagnostic (continued)**

<b>Command</b>	<b>Comment</b>
DIS MSGI/MSGO xx yy	Disable message input/output monitoring (xx=link, yy=priority)
FLSH	Disable monitor and trash buffers
STAT MON	Get status of message monitoring
ENL PACI/PACO	Enable packet input/output monitoring (xx=link)
DIS PACI/PACO xx	Disable packet input/output monitoring (xx=link)
ENXM MSGI/MSGO xx <msg> <msg>	Enable message input/output monitoring excluding those messages specified (xx=link)
DSXM MSGI/MSGO xx	Disable exclusive message monitoring (xx=link)
ENIM MSGI/MSGO xx <msg> <msg>	Enable inclusive message input/output monitoring of only those messages specified (xx=link)
DSIM MSGI/MSGO xx	Disable inclusive message monitoring (xx=link)
DSXP MSGI/MSGO xx	Disable exclusive priority message monitoring (xx=link)
ENIP MSGI/MSGO xx yy	Enable inclusive message input/output monitoring of only those messages with specified priorities (xx=link, yy=priority)
DSIP MSGI/MSGO xx	Disable inclusive priority message monitoring on link xx
ENXT MSGI/MSGO xx <I> <S> <C> <U>	Enable message input/output monitoring excluding messages with specified TN on link xx
<b>—continued—</b>	

**Table 107**  
**LD 48—Link Diagnostic (continued)**

Command	Comment
DSXT MSGI/MSGO xx	Disable exclusive TN message monitoring on link xx
ENIT MSGI/MSGO xx <l> <s> <c> <u>	Enable inclusive message input/output monitoring of only those messages with specified TN (xx=link)
DSIT MSGI/MSGO xx	Disable inclusive TN message monitoring on link xx
SLFT ESDI xx	Self-test ESDI on port xx
STAT CMS xx	Get status of Command and Status Link (CSL) xx
STAT ESDI xx	Display status for ESDI on port xx
— end —	

*Note:* These are not recommended for systems with heavy traffic.

## Configure ESDI or MSDL port (X11 Release 18 or later)

The IPE Module or the Application Module is connected to the Meridian 1 through a port on a QPC513 ESDI card (vintage G or later), NTAK02 SDI/DCH card (Option 11, IPE Module only), or NT6D80 MSDL card.

The port must have the Application Module Link (AML) identified (VSID 0–15). Define the port and its characteristics by responding to the following prompts in LD 17.

### Option 11 ESDI configuration

**Table 108**  
**LD 17—Configure ESDI port (Option 11)**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
ADAN	NEW AML x	Add AML on port x (VASID 0–15)
CDNO	0–15	Serial Data Interface Card Number
PORT	0–3	Port number on SDI/DCH card
DES	LINK/CCR	AML port designation (such as “Meridian Link”)
BPS	19200	19,200 bps baud rate (19.2 kbps). The AML (connection from SDI/DCH card to the IPE Module) rate must match the baud rate of link 0 on the IPE Module.
CLOK	INT	Internal clock (this prompt only appears for ESDI)
IADR	3	Individual address for the data-link level-HDLC protocol
RADR	1	Remote address for the data-link level HDLC protocol
<b>–continued–</b>		

**Table 108**  
**LD 17—Configure ESDI or MSDL port (Option 11) (continued)**

Prompt	Response	Comment
LCTL	YES	Modify link control parameters
T1	4	Layer 2 retransmission timer in units of 0.5 seconds
T2	0	Layer 2 acknowledge timer in units of 0.5 seconds
T3	10	Layer 2 link set-up timer in units of 0.5 seconds (only for ESDI)
N1	128	Maximum I frame length in octet
N2	8	Maximum number of Layer 2 retransmission
K	7	Maximum number of outstanding frames.  <b>Note:</b> The response to this prompt should be set to correspond to the Meridian Link Module's display link 0 K value parameter.
LTHR	<cr>	
ENL	<cr>	
ADAN	<cr>	Go to next prompt
PWD	<cr>	
PARM	<cr>	Interface and transmission mode (MSDL port only)
CEQU	<cr>	
OVLY	<cr>	
VAS	NEW	Add a value added server
VSID	0–15	VAS (host computer) identifier
DLOP	<cr>	
<b>–continued–</b>		

**Table 108**  
**LD 17—Configure ESDI or MSDL port (Option 11) (continued)**

Prompt	Response	Comment
AML	0–15	AML associated with this VAS ID. This number should match the AML port entered at the ADAN.
SECU	YES	Security for AML. Must be set to Yes.
INTL	<cr>	
MCNT	<cr>	
CONF	DIR	Direct link for this AML configuration
AML	<cr>	If another AML port is not required, press [Return].  Enter another AML port if you want more than one AML associated with this VASID; usually not more than one AML is associated with one VASID.
VSID	<cr>	VAS (host computer) identifier
VAS	<cr>	Add a value added server
ATRN	<cr>	
ALARM	<cr>	
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	CHG, END	Either change more data or exit the overlay, saving changes to the configuration record
<b>— end —</b>		

## Option 21–81 ESDI or MSDL configuration

**Table 109**  
**LD 17—Configure ESDI or MSDL port (Options 21–81)**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
ADAN	NEW AML x	Add AML on port x (VASID 0–15)
CTYP	MSDL, ESDI	Card type is MSDL or ESDI
DNUM	0–15	Device number; physical port for AML on ESDI, physical card address for MSDL
PORT	0–3	Port number on MSDL card (this prompt only appears for MSDL)
DES	aaa....a	AML port designation (such as “Meridian Link”)
BPS	19200	19,200 bps baud rate (19.2 kbps). The AML (connection from ESDI to the IPE Module or the Application Module) rate must match the baud rate of link 0 on the IPE Module or the Application Module.
PARM	R232 DCE	Interface and transmission mode (MSDL port only)
CLOK	INT	Internal clock (this prompt only appears for ESDI)
IADR	3	Individual address for the data-link level HDLC protocol
<b>–continued–</b>		

**Table 109**  
**LD 17—Configure ESDI or MSDL port (Options 21–81) (continued)**

Prompt	Response	Comment
RADR	1	Remote address for the data-link level HDLC protocol
LCTL	YES	Modify link control parameters
T1	4	Layer 2 retransmission timer in units of 0.5 seconds
T2	0	Layer 2 acknowledge timer in units of 0.5 seconds
T3	10	Layer 2 link set-up timer in units of 0.5 seconds (only for ESDI)
N1	128	Maximum I frame length in octet
N2	8	Maximum number of Layer 2 retransmission
K	7	Maximum number of outstanding frames.  <b>Note:</b> The response to this prompt should be set to correspond to the Meridian Link Module's display link 0 K value parameter.
LTHR	NO	Modify link performance thresholds (ESDI only)
RXMT*	1–(5)–20	Percentage of retransmissions before out-of-service threshold
CRC*	1–(10)–20	Percentage of CRC errors before out-of-service threshold
ORUR*	1–(5)–255	Number of overrun/underruns before out-of-service thresholds
* Unless there are exceptional reasons to use other values, use the default values for the four out-of-service parameters: RXMT 5, CRC 10, ORUR 5, and ABOR 5.		
–continued–		

**Table 109**  
**LD 17—Configure ESDI or MSDL port (Options 21–81) (continued)**

Prompt	Response	Comment
ABOR*	1–(5)–255	Number of aborts before an out-of-service threshold
ADAN	<cr>	Go to next prompt or exit overlay
VAS	NEW	Add a value added server
VSID	0–15	VAS (host computer) identifier
AML	0–15	AML associated with this VAS ID. This number should match the AML port entered at the first ADAN prompt.
SECU	YES	Security for AML. Must be set to Yes.
INTL	4	Time interval, in five-second increments
MCNT	400	Message count threshold for number of messages per time interval (from INTL)
CONF	DIR	Direct link for this AML configuration
AML	0–15	Enter another AML port if user wants more than one AML associated with this VASID; usually not more than one AML is associated with one VASID
VSID	<cr>	
CSQI	(20)–255	Maximum call registers for AML input queues
<p>* Unless there are exceptional reasons to use other values, use the default values for the four out-of-service parameters: RXMT 5, CRC 10, ORUR 5, and ABOR 5.</p>		
<p><b>–continued–</b></p>		



**Table 109**  
**LD 17—Configure ESDI or MSDL port (Options 21–81) (continued)**

Prompt	Response	Comment
CSQO	(20)–255	<p>Maximum call registers for AML output queues</p> <p>Set CSQI and CSQO equal to the number of ACD agents or AST sets to be controlled by the host computer, or 50, whichever is larger, but not more than 25 percent of the total number of call registers (NCR prompt)</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul> <p>Press [Return] until the REQ prompt appears</p>
REQ	CHG, END	Either change the configuration record or exit the overlay, saving changes to the configuration record
— end —		

## Enable ESDI or MSDL port (X11 Release 18 or later)

Commands in LD 48 require a port or link parameter, which is indicated in the prompts as xx. Substitute the appropriate port or link number when using the prompts listed below.

**Table 110**  
**LD 48—Link Diagnostic**

Command	Comment
ENL AML xx ACMS	Enable the AML on port xx (ESDI only)
ENL AML xx	Enable the AML on port xx (MSDL only)
<b>The following commands may be used for diagnostic purposes:</b>	
STAT AML xx	Show the status of the AML link.
ENL AML xx aaa	Enable link xx or option aaa. Options include (none) - no additional option LYR2 - enable link layer 2 (MSDL must be enabled first) FDL - forced download of AML software (MSDL must be enabled and all AML I/O ports disabled first) AUTO - enable auto recovery of AML (MSDL only) LYR7 - enable application layer (7) (AML must be established first) MDL - enable MDL error reporting (MSDL only) (AML must be enabled first) MON - enable debug monitoring (MSDL only) (AML must be enabled first) ACMS - enable and start the AML on port xx (ESDI only)
ENL MSGI/MSGO xx	Enable message input/output monitoring (xx=link)
DIS MSGI/MSGO xx yy	Disable message input/output monitoring (xx=link, yy=priority)
— continued —	

**Table 110**  
**LD 48—Link Diagnostic (continued)**

<b>Command</b>	<b>Comment</b>
FLSH	Disable monitor and trash buffers
STAT MON	Get status of message monitoring
ENL PACI/PACO xx	Enable packet input/output monitoring (xx=link)
DIS PACI/PACO xx	Disable packet input/output monitoring (xx=link)
ENXM MSGI/MSGO xx <msg> <msg>	Enable message input/output monitoring excluding those messages specified (xx=link)
DSXM MSGI/MSGO xx	Disable exclusive message monitoring (xx=link)
ENIM MSGI/MSGO xx <msg> <msg>	Enable inclusive message input/output monitoring of only those messages specified (xx=link)
DSIM MSGI/MSGO xx	Disable inclusive message monitoring (xx=link)
DSXP MSGI/MSGO xx	Disable exclusive priority message monitoring (xx=link)
ENIP MSGI/MSGO xx yy	Enable inclusive message input/output monitoring of only those messages with specified priorities yy on link xx
DSIP MSGI/MSGO xx	Disable inclusive priority message monitoring on link xx
ENXT MSGI/MSGO xx <I> <S> <C> <U>	Enable message input/output monitoring excluding messages with specified TN on link xx
DSXT MSGI/MSGO xx	Disable exclusive TN message monitoring on link xx
<b>— continued —</b>	

**Table 110**  
**LD 48—Link Diagnostic (continued)**

<b>Command</b>	<b>Comment</b>
ENIT MSGI/MSGO xx <I> <S> <C> <U>	Enable inclusive message input/output monitoring of only those messages with specified TN (xx=link)
DSIT MSGI/MSGO xx	Disable inclusive TN message monitoring on link xx
DIS AML xx aaa	Disable link xx or option xxx. See options above.
EST AML xx	Connect link xx
RLS AML xx	Disconnect link xx
STAT AML	Query status of all ESDI/MSDL links
STAT AML xx	Query status of link xx
SLFT AML xx	Perform self-test on link xx
SWCH AML i j	Switch the active link i over to standby link j
MAP AML xx	Display mapping of AML to card and port numbers
UPLD AML xx TBL1	Display maintenance error log table for link xx (link must be enabled)
UPLD AML xx TBL2	Display download parameters for link xx (link must be enabled)
UPLD AML xx TBL3	Display protocol error table for link xx (link must be enabled)
UPLD AML xx TBL4	Display traffic log table for link xx (link must be enabled)
<b>— end —</b>	

## Configure SDI port for conshare (X11 Release 17)

The SDI port is used for the optional console sharing feature, which allows the IPE Module or the Application Module console to access Meridian 1 administration and maintenance programs. Port settings on the card should reflect TTY mode at 2400 baud. Define the SDI port and its characteristics by responding to the following prompts in LD 17.

**Table 111**  
**LD 17—Configure SDI port (X11 Release 17)**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
PWD2	<cr>	
ISDN	<cr>	
PARM	<cr>	
CEQU	<cr>	
OVLY	<cr>	
IOTB	Yes	Change I/O terminals or devices
HIST	<cr>	
ADAN	NEW TTY x	Add SDI on port x (0–15) for console sharing
ESDI	<cr>	
USER	MTC SCH	Use this port for service change and maintenance
VAS	<cr>	
VSID	<cr>	
DLOP	<cr>	
CMS	<cr>	
SECU	<cr>	
ATRN	<cr>	
—continued—		

**Table 111**  
**LD 17—Configure SDI port (X11 Release 17) (continued)**

Prompt	Response	Comment
MSCL	<cr>	
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	CHG, END	Either change more configuration data or exit the overlay, saving changes to the configuration record
— end —		

## Configure SDI port for conshare (X11 Release 18 or later)

The SDI port is used for the optional console sharing feature, which allows the IPE Module or the Application Module console to access Meridian 1 administration and maintenance programs. Port settings on the card should reflect TTY mode at 2400 baud. Define the SDI port and its characteristics by responding to the following prompts in LD 17.

**Table 112**  
**LD 17—Configure SDI port (X11 Release 18 or later)**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
ADAN	NEW TTY x	Add SDI on port x (0–15) for console sharing
CTYP	SDI	Single port SDI card
	SDI2	Dual port SDI card
	SDI4	Four port SDI card
	XSDI	SDI Paddle Board
DNUM	0–15	Device number (same as ADAN number)
USER	aaa aaa	Enter one or more of the following terminal functions:
	CDR	CDR data link
	BUG	BUG error messages on this port
	CSC	Automatic Set Relocation and Attendant Administration messages
	CTY	CDR TTY port
	MTC	Allow maintenance overlays
	NOO	No overlay allowed
	SCH	Allow service change overlays
	TRF	Traffic reports
XSM	YES, (NO)	SDI port for the System Monitor
ADAN	<cr>	Go to next prompt

## Enable SDI port

Some commands in LD 37 require a port number, indicated in the prompts as x. Substitute the appropriate port number in the prompts listed below.

**Table 113**  
**LD 37—Input/output diagnostic**

<b>Command</b>	<b>Comment</b>
DIS TTY x	Disable TTY x
END	Clear all test activity
ENL TTY x	Enable TTY x
STAT	Provide status of all input/output devices for this system
STAT TTY	Provide status for all TTY devices in this system
STAT TTY x	Provide status for TTY on port x
TTY x	Test TTY x



## Configuring DNIS to use auto-terminating trunks

Dialed Number Identification Service (DNIS) is an optional feature that provides the last digits of the dialed number. DNIS is defined by responding to specific prompts in LD 15, LD 16, and LD 14. This section describes how you can configure DNIS to use auto-terminating trunks. You can alternatively configure DNIS to use Incoming Digit Conversion (IDC); refer to “Configuring DNIS to use Incoming Digit Conversion” later in this chapter.

**Note:** Meridian Link 5C and CCR Release 3C support up to 31 DNIS digits. X11 Release 24 is required for this feature. Prior to X11 Release 24, only seven digits were supported.

### LD 15—Customer data block

The DNIS option must be enabled in LD 15.

**Table 114**  
**LD 15—Enable DNIS**

Prompt	Response	Comment
REQ	CHG	Create or change data in the database
TYPE	AML_DATA	Change Application Module Link options
CUST	0–99	Customer number
OPT	DNI	DNIS for this customer
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	CHG, END	Either change more customer data or exit the overlay

## LD 16—Route data block

LD 16 defines the route (Table 115). The routes used for DNIS must auto-terminate. All incoming calls on a DNIS route, regardless of the number dialed, will terminate on a pre-specified DN. This DN is defined for each trunk in LD 14 (Table 116).

**Table 115**  
**LD 16—Trunk route administration**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	RDB	Route data block
CUST	0–99	Customer number
ROUT	0–511	Route number
TKTP	XXX	Trunk type.
		<b>Note:</b> The only auto-terminating trunk types are DID and TIE.
ESN	<cr>	
CNYT	<cr>	
SAT	<cr>	
RCLS	<cr>	
DTRK	XXX	Digital Trunk route
DGTP	XXX	Digital Trunk type
ISDN	<cr>	
PTYP	<cr>	
AUTO	YES	Auto-terminating trunks
<b>— continued —</b>		

**Table 115**  
**LD 16—Trunk route administration (continued)**

Prompt	Response	Comment
DNIS	YES	ACD-Dialed Number Identification Service (DNIS) route. The route must be configured as one that provides DNIS digits. Only the following types of routes can be configured for DNIS: TIE/DID/WATS auto-terminating or IDC routes, FEX IDC routes, and FGDT routes.
NDGT	1-(4)-31	Number of DNIS digits expected. X11 Release 20 through 22: 1-(4)-7 X11 Release 23: 7, to program the feature of a seven-digit DNIS X11 Release 24: up to 31
ICOG	xxx	Incoming and Outgoing trunk  IAO = In and out ICT = Incoming trunk OGT = Outgoing trunk
ACOD	xxxx	Access code for the trunk route
		• Press [Return] until the REQ prompt appears • •
REQ	END	Exit the overlay, saving changes
— end —		

## LD 14—Trunk data block

The pre-specified DN (auto-terminate DN) where all incoming calls on a DNIS route auto-terminate is defined in this program.

*Note:* The ATDN must be defined prior to configuration.

**Table 116**  
**LD 14—Configure auto-terminating DN**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	aaa	Approved trunk types for this action
TN	l s c u	Terminal number for the trunk
XTRK	EXUT, XCOT, XDID, XEM, XUT, XFEM	Extended trunk
CUST	xx	Customer number associated with this trunk, as defined in LD 15.
NCOS	<cr>	
RTMB	0–511 0–254	Route and member number
ATDN	xxxx	Auto-terminating DN. Must be ACD DN or CDN.  <b>Note:</b> The only auto-terminating trunk types are DID and TIE.
SIGL	DX2, DX4, EAM, EM4, GRD, LDR, LOP, OAD	Trunk signaling
STRO	DDL, IMM, OWK, WNK	Start Arrangement Outgoing
STRI	DDL, IMM, OWK, WNK	Start Arrangement Incoming
— continued —		

**Table 116**  
**LD 14—Configure auto-terminating DN**

<b>Prompt</b>	<b>Response</b>	<b>Comment</b>
SUPN	(NO), YES	Answer and disconnect supervision required
TKID		Trunk identifier
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	END	Exit the overlay, saving changes
<b>— end —</b>		

## Configuring DNIS to use Incoming Digit Conversion

The Incoming Digit Conversion (IDC) feature can optionally be used to provide routing by DNIS number as an alternative to using auto-terminating trunks (see “Configuring DNIS to use auto-terminating trunks” earlier in this chapter). The DNIS number can be translated into an ACD DN number and the DNIS number used as information.

*Note:* X11 Release 23 allows configuration of a seven-digit DNIS. Although X11 Release 24 supports up to a 31-digit DNIS, only a maximum of 16 digits are allowed when used with the IDC feature.

**Table 117**  
**LD 15—ACD routing by DNIS number**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	CDB	
OPT	DNI	
•		Press [Return] until the NFCR prompt appears
•		
•		
NFCR	YES	New flexible code restriction
MAXT*	1–255	Maximum number of NFCR trees
IDCA	YES	Incoming Digit Conversion
DCMX*	1–255	Maximum number of conversion tables prompted only if answer YES to IDCA prompt. No default.
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	CHG, END	Either change more customer data or exit the overlay
* The total combined value of MAXT and DCMX cannot be greater than 255 (MAXT + DCMX ≤ 255). That is, if MAXT = 5, DCMX cannot be greater than 250.		

In order for DNIS to be used on Incoming Digit Conversion trunks, the trunk route must be configured to allow DNIS and IDC (Incoming Digit Conversion).

**Table 118**  
**LD 16—Trunk route administration**

Prompt	Response	Comment
REQ	NEW, CHG	Add or change data
TYPE	RDB	Route data block
•		Press [Return] until the DNIS prompt appears
•		
•		
DNIS	YES	Allow Directory Number Identification System (DNIS) services
NDGT	1-(4)-31	Number of DNIS digits expected. X11 Release 20 through 22: 1-(4)-7 X11 Release 23: 7, to program the feature of a seven-digit DNIS X11 Release 24: up to 31
•		Press [Return] until the IDC prompt appears
•		
•		
IDC	YES	Allow Incoming Digit Conversion (IDC)
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	END	Exit the overlay, saving changes to the route data block

The translation tables define which DNIS numbers are routed to which ACD DN's. Any range of numbers defined (indicated by “\*”) must be contiguous. The beginning DNIS number and the last DNIS number in a range must have the same number of digits.

X11 Release 23 allows 7 full digits of DNIS information to be sent across the link. X22 Release 24 supports up to a 31-digit DNIS.

Both DNIS and ACD DN ranges can be expressed explicitly or implicitly. For example:

- 2000–2010 defines all DNIS numbers 2000, 2001, 2002, ... 2010 (see response to IDGT prompt in Table 119)
- 55 defines all DNIS numbers 5500 through 5599 (see response to IDGT prompt in Table 121)
- 77 defines all ACD DNs 7700 through 7799 (see response to 55 prompt in Table 121)

Tables 114 through 116 illustrate how to assign a single DNIS number to a single ACD DN, and how to assign a block of DNIS numbers to either a single ACD DN or a block of ACD DNs.

**Table 119**  
**LD 49—Defining IDC translation tables**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	IDC	Incoming Digit Conversion
DCNO	0–254	Translation table number
IDGT	3000	Incoming digits (the DNIS number). The DNIS number can be from 0 to 9999.
3000	8555	The DNIS number entered in the IDGT prompt is reprompted and the response is the internal ACD DN where this DNIS number is routed
IDGT	2000 2010	Defines a contiguous range of DNIS numbers. Both DNIS numbers must contain the same number of digits.
— continued —		



**Table 119**  
**LD 49—Defining IDC translation tables (continued)**

Prompt	Response	Comment
2000	8900	When the starting DNIS number (for example, 2000) is prompted, enter the ACD DN (for example, 8900) where it is to be routed
2001	8900	When the next DNIS number is prompted, enter the ACD DN where it is to be routed
2003	8989	When the next DNIS number is prompted, enter the ACD DN where it is to be routed
2004	X	To remove a DNIS number from the translation table, type <b>x</b> .
•		Continue to assign DNIS numbers to ACD DNs until all have been assigned or deleted
•		
•		
2010	8907	Last DNIS number of the range
IDGT	<cr>	End of modifying for this translation table
REQ	END	Either create a new translation table or exit the overlay, saving the new translation table
<b>— end —</b>		

If, in a block of DNIS numbers, all numbers start with the same two or three digits, and if all numbers are to be translated to the same ACD DN, the program does not need translation entries for all numbers in the block. For example, if DNIS numbers 4400 through 4499 all go to ACD DN 8900, the following can be used.

**Table 120**  
**LD 49—Defining a block of DNIS numbers**

Prompt	Response	Comment
REQ	NEW	Create data in the database
TYPE	IDC	Incoming Digit Conversion
.		Press [Return] until the DCNO prompt appears
.		
.		
DCNO	0–254	Translation table number
IDGT	44	Incoming digits (the DNIS number)
44	8900	All DNIS numbers starting with 44 will go to ACD DN 8900
IDGT	<cr>	End of modifying for this translation table
REQ	NEW, END	Either create a new translation table or exit the overlay, saving the new translation table

If the last digits of the DNIS number and the ACD DN are identical, the program allows a simpler definition.

**Table 121**  
**LD 49—Partial digit conversion**

Prompt	Response	Comment
REQ	NEW	Create data in the database
TYPE	IDC	Incoming Digit Conversion
.		Press [Return] until the DCNO prompt appears
.		
.		
DCNO	0–254	Translation table number
IDGT	49	Incoming digits (the DNIS number)
49	86	DNIS number 49XX will go to ACD DN 86XX (that is, 4925 will go to 8625)
IDGT	55	
55	77	DNIS number 55XX will go to ACD DN 77XX
IDGT	3	
3	2	DNIS number 3XX will go to ACD DN 2XX
IDGT	6	
6	88	DNIS number 6XX will go to ACD DN 88XX
IDGT	<cr>	End of modifying for this translation table
REQ	NEW, END	Either create a new translation table or exit the overlay, saving the new translation table

## Configure devices for status change host notification

An optional feature, Unsolicited Status Events are provided in status change messages, allowing 12 types of unsolicited status events to be sent to a host application. The types of status change events are as follows:

- ***Ringin***g indicates that an incoming call is ringing on a DN. The status change message contains the DNs of both the calling (where available) and called parties.
- ***Answered*** indicates that a party has established a connection to another party. The status change message contains the DNs of both parties (where available).
- ***Off-hook*** indicates that a telephone is busy while it places a call or answers an incoming call. The status change message contains the DN of the telephone that is unavailable, and, if applicable, the far end DN.
- ***On-hook*** indicates that a telephone is available. The status change message contains the DN of the telephone that is available and, if applicable, the far end DN.
- ***Disconnected*** indicates that a telephone set has disconnected from a call. The StatusChange disconnect message is enhanced for specific scenarios. The Call Type IE is added to this message to indicate when a set is disconnecting due to a complete transfer. The Call Type IE will have a new value, H.A. - transfer complete, in the StatusChange disconnect message. This value is passed to the application.

**Note:** The Disconnected event is available only with X11 Release 17 and later software. X11 International Phase 7 software offers only four status change events.

- ***Unringin***g indicates when a set stops ringing without having answered a call. Situations that would trigger a Status Change message with the unringing status include a caller that abandons after listening to the ringing tone; a call forwarded to another DN after having rung a specified number of times (Call Forward No Answer); Call Pickup (call is picked up by another party); or if an attendant goes off night service while the night service DN is in a ringing state.

**Note:** The Unringing event is available only with X11 Release 19 and later software. X11 International Phase 7 software offers only four status change events.

- **Transfer completed to** notifies the application when a DN has completed a transfer to another DN. This message is sent on behalf of the destination DN of the transfer, the party which had just received the transferred call. This message is supported for both analog and digital sets.
- **Conference completed to** notifies the application when a DN has completed a conference to another DN. This message is sent on behalf of the destination DN of the conference, the party which is being conferenced into the call. This message is supported for both analog and digital sets.
- **Conference to simple** notifies the application when a conference call reverts from a 3-party to a 2-party call. This message is sent on behalf of DNs that are monitored by the application. This message includes the DN and TN information of the two parties left in the conference call.
- **Hold** notifies the application of when a DN has just put the active call on hold. The StatusChange hold notification message is sent to applications on behalf of digital and 500/2500 sets.

The StatusChange hold message is a notification of a set invoking hold. The ML Hold message to invoke the hold feature for digital and 500/2500 sets is developed in X11 Release 22.

The StatusChange hold message is sent when a call is put on hold. The automatic hold feature, an X81 feature, puts an active call on hold when another DN key is pressed on the set where an active call already exists. A StatusChange hold message is sent in this scenario.

- **Transfer initiation** notifies the application when a transfer is initiated by or on behalf of a set. This feature is supported for digital sets only. If a 500/2500 set performs a switch-hook flash to initiate a transfer, the application receives a StatusChange hold message.
- **Conference Initiation** notifies the application when a conference is initiated by or on behalf of a set. Conference initiation is supported for digital sets only. If a 500/2500 set performs a switch-hook flash to

initiate a conference, the application receives a StatusChange hold message.

- **Retrieve** also known as Restore, notifies the application when the set that had invoked Hold retrieves the original call and becomes active again.

The status change messages sent from Meridian 1 are defined in groups. Group 0 is predefined to contain no messages, and group 1 is predefined to contain all messages; the remaining groups are defined by the user. Status events are assigned to status message groups on a per customer basis in LD 15.

The status change messages on non-ACD DN's are reported to the server defined at the VSID prompt in LD 15. For ACD DN's, these messages are reported to the server defined at the VSID prompt in LD 23. However, for most applications, the server defined in LD 15 is the same as the server defined in LD 23.

Any individual telephone that is designated as an associated set (AST) can be assigned to one of the status message groups in LD 10 (single-line telephones) or LD 11 (multi-line telephones) by responding to the IAPG prompt. Each telephone belongs to only one group. Only the status change events defined in the group assigned to a telephone are reported. The status change events can be reported for all DN's defined as associated sets.

An AST can be controlled by a host application over the Meridian Link. A telephone must be configured as AST in LD 10 or LD 11 before a host application can issue call processing requests (such as transfer, conference, answer) or receive event reports on behalf of the telephone (such as status change). For multi-line telephones, up to two DN's can be configured as AST. For multiple appearance DN's (MADN's), the first DN to be configured is identified as the associated set.

## Define status message groups

Use LD 15 to define the status message groups.

**Table 122**  
**LD 15—Define status message groups**

Prompt	Response	Comment
REQ	CHG	Create or change data in the database
TYPE	AML_DATA or CDB	Customer data block. X11 Release 22: Enter AML_DATA. X11 Release 21 and prior: Enter CDB.
CUST	0–99	Customer number
•		Press [Return] until the VSID prompt appears
•		
VSID	0–15	Value Added Server Identifier ID. This must be identical to the VSID defined in LD17.
Examples are		
GRP2	1 2 3 6	Assign status events 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 to groups 2 to 15, where 1 = on-hook, 2 = off-hook, 3 = ringing, 4 = active, 5 = set disconnected, 6 = unringing 7 = retrieve (X11 Release 21), 8 = ID change, 9 = transfer completed to, 10 = conference completed to 11 = conference to simple 12 = hold, 13 = transfer initiation, 14 = conference initiation  <b>Note:</b> Status events 8 through 14 are available only for X11 Release 22 and later, with Meridian Link 5 and later.
GRP3	1 3 5 6	
GRP4	1 2 3 4 5 6	
GRP5	2 4 5 6	
GRP6	1 2 3 4 5 6	
GRP7	1 2 3 4 5 6	
GRP8	1 2 3 4 5 6	
GRP9	1 2 3 4 5 6	
GRP10	1 2 3 4 5 6	
GRP11	1 2 3 4 5 6	
GRP12	1 2 3 4 5 6	
GRP13	1 2 3 4 5 6	
GRP14	1 2 3 4 5 6	
GRP15	1 2 3 4 5 6	
—continued—		

**Table 122**  
**LD 15—Define status message groups (continued)**

Prompt	Response	Comment
		<p>Default values are in group 0 and group 1:            Group 0 = sends no messages            Group 1 = sends all messages</p> <p>Groups 0 and 1 may be used in LD 10 and LD 11 in response to the IAPG prompt.</p> <p>Precede with "X" to remove a status event from a group.</p> <p><b>Note:</b> Groups 10 through 15 are available only in X11 Release 17 or later software.</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul>
REQ	END	Exit the overlay, saving changes
		— end —



## Assign telephones to status message groups (Meridian Link)

Automatic Call Distribution (ACD) or non-ACD telephones can be assigned to status message groups if they are configured as AST (associated set).

### Define ACD groups and agents

To configure an ACD group that uses Meridian Link, type **yes** at the ISAP prompt (and the AST prompt, for X81 software and X11 International Phase 7 software prior to Release 17). Any telephone can be designated as AST.

**Table 123**  
**LD 23—Build ACD groups**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	ACD	Automatic Call Distribution data block
CUST	0–99	Customer number
ACDN	xxxx	AC Directory Number
MWC	<cr>	
AST	YES	Associated set (X81 software, X11 International Phase 7 software prior to Release 17 only)
DSAC	<cr>	
MAXP	xx	Maximum number of agent positions for this ACD DN
SDNB	<cr>	
BSCW	<cr>	
ISAP	YES	Meridian Link messages sent across the link
VSID	0–15	Value Added Server (host computer) Identification as defined in LD 17.
<b>Note:</b> Enter VAS ID assigned to Meridian Link.		
— continued —		

**Table 123**  
**LD 23—Build ACD groups (continued)**

Prompt	Response	Comment
• • •		Press [Return] until the REQ prompt appears
REQ	NEW, CHG, END	Either build another ACD group or exit the overlay, saving changes
— end —		

**Define ACD telephones as AST**

After defining ACD groups, configure ACD agent telephones designated as AST for those groups; in LD 10 for single-line telephones and LD 11 for multi-line telephones.

**Table 124****LD 10—Define single-line ACD telephones as AST**

Prompt	Response	Comment
REQ	NEW	Add new telephone
TYPE	500	Single-line type of telephone
TN	l s c u	Terminal number
CDEN		
DES		
CUST	0–99	Customer number
DIG		
DN	xxxx	DN for the telephone
AST	YES	
IAPG	(0)–15*	Application Module Link (AML) status message group, defined in LD 15. Since Group 0 sends no messages, the default value is not normally used. Group 1 (all messages) or a customer-defined group (2–15) would normally be used here.
CLS	AGTA	Class of service—ACD agent assignment
	THFA	Switchhook flash allowed
	UNR	Unrestricted access
	WTD, (WTA)	Warning Tone Denied (Allowed)
SPID	xxxx	Supervisor position ID
*Groups 10 through 15 are only available in X11 Release 17 or later software.		
—continued—		

**Table 124**  
**LD 10—Define single-line ACD telephones as AST (continued)**

Prompt	Response	Comment
PRI	(1)–48	Priority level for ACD agent
AACD	YES	Associated set for ACD agent (X11 Release 17 or later software)
FTR	ACD xxxx yyyy	ACD feature allowed, where xxxx = the ACD DN yyyy = the ACD Position (POS-ID)
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	NEW, END	Either define another single-line ACD telephone as AST or exit the overlay, saving changes
— end —		

**Table 125**  
**LD 11—Define multi-line ACD telephones as AST**

Prompt	Response	Comment
REQ	NEW	Add new telephones
TYPE	aaa	Enter telephone type as appropriate
TN	l s c u	Terminal number
DES	ACD	
CUST	0–99	Customer number
KLS	1–7	Number of key/lamp strips attached
•		Press [Return] until the AST prompt appears
•		
•		
AST	00 07	DN key(s) with AST telephone assignment (host controllable); Release 17 or later software. This example shows keys 0 and 7 configured as AST.
IAPG	(0)–15*	AML link status message group, defined in LD 15. Since Group 0 sends no messages, the default value is not normally used. Group 1 (all messages) or a customer-designated group (2–15) would normally be used here.
•		Press [Return] until the KEY prompt appears
•		
•		
*Groups 10 through 15 are only available in X11 Release 17 or later software.		
— continued —		

**Table 125**  
**LD 11—Define multi-line ACD telephones as AST (continued)**

Prompt	Response	Comment
KEY 0	ACD XXXXXXXX YYYY	XXXXXXX = ACD DN YYYY = Agent position ID  <b>Note:</b> If using CLID, type <b>0</b> (????) between ACDDN and POS ID.
KEY 1	MSB	Make set busy
KEY 2	NRD	Not ready
KEY 3	TRN	Transfer
KEY 4	AO6	6 Party conference
KEY 7	SCR XXXX	XXXX = IDN
KEY 9	RLS	Release if type = SL1
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	NEW, END	Either define another multi-line ACD telephone as AST or exit the overlay, saving changes
<b>— end —</b>		

**Define non-ACD telephones as AST**

To configure a DN as an AST telephone, make changes to telephone data in LD 10 for single-line telephones or LD 11 for multi-line telephones.

**Table 126**  
**LD 10—Define single-line telephones as AST**

Prompt	Response	Comment
REQ	NEW	Add new telephones
TYPE	500	Single-line type of telephones
TN	l s c u	Terminal number
CDEN		
DES		
CUST	0–99	Customer number
DN	xxxx	Directory number of the telephone
AST	YES	Telephone is designated as associated set
IAPG	(0)–15*	AML link status message group, defined in LD 15. Since Group 0 sends no messages, the default value is not normally used. Group 1 (all messages) or a customer-designated group (2–15) would normally be used here.
		• Press [Return] until the REQ prompt appears
		•
		•
REQ	NEW, END	Either define another single-line non-ACD telephone as AST or exit the overlay, saving changes
*Groups 10 through 15 are available only in X11 Release 17 or later software.		

**Table 127**  
**LD 11—Define multi-line telephones as AST**

Prompt	Response	Comment
REQ	NEW	Add new telephones
TYPE	aaa	Enter the telephone type as appropriate
TN	l s c u	Terminal number
CDEN	SD, (DD), 4D	Card density
CUST	0–99	Customer number
KLS	1–7	Number of key/lamp strips attached
•		Press [Return] until the AST prompt appears
•		
AST	00	DN key with AST telephone assignment (host controllable; up to two DN keys can be assigned as AST). This example shows that key 0 is an AST DN.
IAPG	(0)–15*	AML link status message group, defined in LD 15. Since Group 0 sends no messages, the default value is not normally used. Group 1 (all messages) or a customer-designated group (2–15) would normally be used here.
•		Press [Return] until the KEY prompt appears
•		
•		
*Groups 10 through 15 are only available in X11 Release 17 or later software.		
—continued—		



**Table 127**  
**LD 11—Define multi-line telephones as AST (continued)**

Prompt	Response	Comment
KEY 0	SCR XXXX	XXXX = AST DN
KEY 1	TRN	Transfer
KEY 2	AO6	6 Party conference
KEY 9	RLS	Release if type = SL1
•		Press [Return] until the REQ prompt appears
•		
•		
REQ	NEW, END	Either define another multi-line non-ACD telephone as AST or exit the overlay, saving changes
<b>— end —</b>		

## Configure ACD DNs

Two types of ACD DNs are described here: the default ACD DN and the ACD DN that handles IVR calls. See the *X11 Input/Output Guide* (NTP 553-3001-400) for information on configuring regular ACD DNs.

**Note:** ACD DNs must be created on the Meridian 1 before variables can be created for them. Refer to Table 123.

**Table 128**  
**LD 23—Define the default ACD DN**

Prompt	Response	Comment
REQ	NEW, CHG	Create or change data in the database
TYPE	ACD	Automatic Call Distribution data block
CUST	0–99	Customer number
ACDN	xxxx	ACD Directory Number
MWC	<cr>	
AST	Yes	
DSAC	<cr>	
MAXP	xx	Maximum number of agent positions for this ACD DN
SDNB	<cr>	
BSCW	<cr>	
ISAP	Yes (Meridian Link) or <cr> (CCR)	ACD messages sent (not sent) in Meridian Link application
VSID	0–15	VAS ID. Must be identical to VSID defined in LD17.
REQ	END	Exit the overlay

**Note:** Systems with two modules (two Application Modules, two IPE Modules, or one of each), with Meridian Link activated in one and CCR activated in the other, will require two AMLs and hence two VAS IDs. In that case, you must define two VSID numbers in Table 109 and assign two status message groups in one of Tables 124–127.

**Table 129**  
**LD 23—Define an ACD DN with IVR handling (if applicable)**

Prompt	Response	Comment
REQ	NEW	Create or change data in the database
TYPE	ACD	Automatic Call Distribution data block
CUST	0–99	Customer number
ACDN	xxxx	ACD Directory Number
MWC	<cr>	
DSAC	<cr>	
MAXP	xx	Maximum number of agent positions for this ACD DN
SDNB	<cr>	
BSCW	<cr>	
ISAP	<cr>	CCR messages sent across the link
VSID	0–15	Value Added Server Identification as defined in LD 17; only required if the IVR/VRU unit is connected to Meridian 1 by an AML/CSL
IVR	YES	This ACD DN handles IVR routing
TRDN	xxxx	Treatment DN for IVR calls (used by CCR if IVR treatment is not specified in the script)
		This DN refers to treatment within an IVR/VRU unit connected by an AML/CSL
REQ	NEW, END	Either define another ACD DN or exit the overlay, saving changes

## Configure Control DN (CCR)

A Control DN (CDN) is a specialized ACD queue that has no agents. One CDN is required for each CCR script.

A CDN in controlled mode offers control of calls to applications. A CDN when not in controlled mode is essentially the same as a CDN used in Enhanced ACD Routing (EAR), so the CDN/EAR parameters should be programmed in the same way other EAR CDNs are programmed at that site. The CDN/EAR parameters are the following prompts: FRRT, FRT, SPRT, SRT, FROA, MURT, DFDN, CEIL, RPRT, CWTH, BYTH, and OVTH.

### IMPORTANT

CDNs must be configured on the Meridian 1 before you start scripting in CCR. If they do not exist, any variables or associations you set up in CCR will be lost.

**Table 130**  
**LD 23—Define CDNs**

Prompt	Response	Comment
REQ	NEW, CHG	New or change
TYPE	CDN	Control DN for Enhanced ACD Routing (EAR) calls
CUST	0–99	Customer number
CDN	nnnn	Control DN number
FRRT	0–511	First RAN route number for EAR
FRT	0–2044	Seconds before unanswered EAR calls are connected to first RAN
SRRT	0–511	Second RAN route number for EAR
SRT	0–2044	Seconds before unanswered calls are connected to second RAN
— continued —		

**Table 130**  
**LD 23—Define CDNs (continued)**

Prompt	Response	Comment
FROA	YES, (NO)	First RAN to be given to incoming calls immediately
MURT	0–511	Music route number
DFDN	nnnn	Local default ACD DN
CEIL	0–(2047)	CDN ceiling value
OVFL	(NO), YES	Force overflow tone to the call when the ceiling threshold has been exceeded.
TDNS	(NO), YES	Is DNIS number an original called party?
RPRT	(YES), NO	Report Control option
CNTL	YES	Controlled mode should be set to Yes for application use. If set to Yes, when the application acquires control of the CDN after registration, RouteRequest and other messages will be sent from the CDN to the application. When no application is registered, the default ACD DN specified at the DFDN prompt will receive the call and the EAR treatments specified here will be applied to the call.
VSID	0–15	Value Added Server (VAS) ID as defined in LD 17
HSID	0–15	Host Link ID
CWTH	0–(1)–2047	Call Waiting Threshold indicates the number of calls waiting unanswered in the CDN before a monitoring supervisor or agent's DWC key would light.
<b>— continued —</b>		

**Table 130**  
**LD 23—Define CDNs (continued)**

Prompt	Response	Comment
BYTH	(0)–2047	Busy Threshold indicates the number of calls waiting in a controlled CDN before a monitoring supervisor or agent’s DWC key would begin flashing to indicate that the CDN was busy. Note that calls would be handled normally; only the DWC key lamp is affected by the CWTH, BYTH, and OVTH values.
OVTH	0–(2047)	Overflow Threshold indicates the number of calls waiting in a control CDN before a monitoring supervisor’s or agent’s DWC light would wink to indicate that the CDN was in “overflow” state. Note that the calls will be handled normally; only the DWC key lamp is affected by the CWTH, BYTH, and OVTH values.
ACNT	xxxx	Account default activity code
REQ	NEW, CHG, END	Either define another CDN or exit the overlay, saving changes
— end —		

## Configuring a Phantom Loop

A phantom loop is configured the same way as a normal loop with the exception of a “C” preceding the loop number. It is important that a physical loop card be installed. A phantom DN can then be configured as part of a specific device group. After configuration changes to the loop card, the system must be reinitialized for the new settings to take effect. Phantom loops are only supported as local terminal loops. For more information, refer to *X11 Software Features Guide* (NTP 553-3001-305).

**Note:** The phantom terminal number of type “N” must not be used in place of “C”.

**Table 131**  
**LD 17—Set up Phantom Loops**

Prompt	Response	Comment
REQ	CHG	Change
TYPE	CEQU	Common equipment
•		Press [Return] until the TERM prompt appears.
•		
•		
TERM	0-159 (X) 0-159 (C) 0-159	Single density local terminal loops. Precede loop number with X to remove. Precede loop number with C to create a phantom loop.
TERD	0-159 (X) 0-159 (C) 0-159	Double density local terminal loops. Precede loop number with X to remove. Precede loop number with C to create a phantom loop.
TERQ	0-159 (X) 0-159 (C) 0-159	Quad density local terminal loops. Precede loop number with X to remove. Precede loop number with C to create a phantom loop.

## Configuring a Phantom Superloop

A phantom superloop is configured the same way as a normal loop with the exception of a “C” preceding the loop number.

**Table 132**  
**LD 97—Configuring a Phantom Superloop**

Prompt	Response	Comment
REQ	CHG	Change
TYPE	SUPL	Superloop parameters
SUPL	0-156	Superloop number in multiples of four.
	(X) 0-156	Precede loop number with X to remove.
	(C) 0-156	Precede loop number with C to create a phantom loop.



## Creating a Phantom Set

After configuring the phantom loop, an AST Meridian 1 proprietary set can be designated to a specific device group which can be controlled by applications. Therefore, when an application wants to originate a call on behalf of an idle TN, it can use a phantom TN. This idle TN is an AST Meridian 1 proprietary set which is defined on a phantom loop. There is no upper limit on the number of devices per group defined by a Phantom DN. The upper limit is the limit of the number of TNs that can be defined for the loop card. This number is dependent on the density of the loop card. The ITNA and DGRP prompts need to be configured as shown in Table 133.

*Note:* A phantom set cannot be created for an ACD agent.

**Table 133**  
**LD 10—Creating a Phantom Set**

Prompt	Response	Comment
REQ	NEW	New
TYPE	aaaa	Telephone type, where: aaaa = SL1, 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, or 3000.
TN	l s c u c u	Terminal number Terminal number for the Option 11
•		Press [Return] until the CDEN prompt appears.
•		
•		
CDEN	SD, DD, 4D	Card density SD = Single density DD = Double density 4D = Quad density
DES	phanDN	One-to-six character Office Data Administration System (ODAS) Station Designator
— continued —		

**Table 133**  
**LD 10—Creating a Phantom Set (continued)**

Prompt	Response	Comment
CUST	0-99	Customer number
.		Press [Return] until the CLS prompt appears.
.		
.		
CLS	NDD	No digit display is recommended if configuring phantom devices.
CLS	(DNDD)	Dialed Name Display denied is recommended if configuring phantom devices.
.		Press [Return] until the AST prompt appears.
.		
.		
AST	00	Key 0 is AST.
IAPG	(0)–15	Meridian Link Unsolicited Status Message (USM) group. These groups determine which status messages are sent for an AST set. The default 0 sends no messages, whereas Group 1 sends all messages.
ITNA	(NO), YES	Idle TN for third-party application. Select YES for Phantom TN.
DGRP	(1)–5	Device group with which phantom TNs are associated.
.		Press [Return] until the KEY prompt appears.
.		
.		
KEY	xx SCR yyyy	Key number, Single Call Ringing, DN
CLS	xx RLS	Key number, Releases.
— end —		

## Configuring Dual VAS ID

Overlay 23 is modified to prompt for ISAP and VASID for Meridian Link even if the DN type is Meridian Mail ACD-DN. To configure an ACD-DN as Meridian Mail DN, type **YES** in response to prompts MWC, IMS, CMS, IMA and IVMS.

**Table 135**  
**LD 23—Configuring Dual VAS ID**

Prompt	Response	Comment
REQ	NEW	New
TYPE	ACD	Automatic Call Distribution data block
CUST	0-99	Customer number
ACDN	xxxx	AC Directory Number
MWC	YES, NO	
IMS	YES, NO	
CMS	YES, NO	
IMA	YES, NO	
IVMS	YES, NO	
EES	YES, NO	
VSID	0-15	Value Added Server Identifier ID; must be identical to the VSID defined in LD17.
.		Press [Return] until the ISAP prompt appears.
.		
.		
ISAP	YES, NO	Type <b>YES</b> to send AML messages to Meridian Link.
VSID	0-15	Value Added Server Identifier ID; must be identical to the VSID defined in LD17.
.		Press [Return] until the REQ prompt appears.
.		
.		
REQ	END	Exit the overlay

## Traffic statistics

LD 2 is used to set and schedule traffic statistics for the Application Module Link (AML). A count is kept (in traffic report 8) of all incoming and outgoing messages, and these counts can be scheduled to print periodically. For more details on traffic, see *Traffic Measurement* (NTP 553-2001-450).

**Table 134**  
**LD 2—Traffic statistics**

Command	Comment								
SOPS 8	Set report 8 (for AML traffic collection)								
TOPS	Query report types set								
SSHS	Set system reports schedule Prompts similar to the following appear:								
	<table> <thead> <tr> <th>Prompt</th> <th>Response</th> </tr> </thead> <tbody> <tr> <td>01 01 31 12 - -</td> <td>SD SM ED EM Where: SD = start date, SM = start month, ED = end date, EM = end month</td> </tr> <tr> <td>00 23 3 - -</td> <td>SH EH SO Where: SH = start hour, EH = end hour, SO = schedule options (0=no traffic scheduled, 1=hourly, on the hour, 2=hourly, on the half hour, 3=half hourly)</td> </tr> <tr> <td>NIL - -</td> <td>D; where D = day of week: 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday 7 = Saturday</td> </tr> </tbody> </table>	Prompt	Response	01 01 31 12 - -	SD SM ED EM Where: SD = start date, SM = start month, ED = end date, EM = end month	00 23 3 - -	SH EH SO Where: SH = start hour, EH = end hour, SO = schedule options (0=no traffic scheduled, 1=hourly, on the hour, 2=hourly, on the half hour, 3=half hourly)	NIL - -	D; where D = day of week: 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday 7 = Saturday
Prompt	Response								
01 01 31 12 - -	SD SM ED EM Where: SD = start date, SM = start month, ED = end date, EM = end month								
00 23 3 - -	SH EH SO Where: SH = start hour, EH = end hour, SO = schedule options (0=no traffic scheduled, 1=hourly, on the hour, 2=hourly, on the half hour, 3=half hourly)								
NIL - -	D; where D = day of week: 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday 7 = Saturday								
TSHS	Query current system reports schedule. Output is similar to that in the SSHS command (above).								

Type \*\*\*\* to exit overlay.

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## Chapter 13: Meridian Mail configuration

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Host Enhanced Voice Processing (HEVP) provides basic voice-processing capabilities, via a Meridian Mail voice port, to applications based on Meridian Link. The HEVP feature (Meridian Link Service 101) requires dedicated Meridian Mail voice channels for use by Meridian Link-based applications. The number of channels required depends on the traffic expected for the application; each channel can hold only one call at a time. The channel numbers assigned in the Meridian Mail system must be acquired by the HEVP application, so the same numbers must be defined both in the application and on the Meridian Mail system.

To use the HEVP feature, you must have Meridian Mail 8 (or later) software with the Access Enable option. In addition, the Meridian 1 system, the Meridian Mail system and the Meridian Link-based application must be configured. This configuration involves the following tasks:

- defining a separate ACD queue on the Meridian 1 and assigning it to the Meridian Mail, to direct calls to the dedicated voice channels
- creating one virtual agent position for each channel and assigning it to the ACD queue
- defining the ACD DN in the Meridian Mail Voice Service DN Table (VSDN Table), to allow access to voice channels
- dedicating each voice channel into the Channel Allocation Table (CAT)
- creating a new mailbox for the application, to hold the application's pre-recorded prompts in voice segment file(s)
- increasing the amount of storage space in the mailbox—if the application needs a large number of prompts, or if the prompts are long

This chapter provides

- a brief overview of how the Meridian 1 system, the Meridian Mail system, and the Meridian Link-based application configuration parameters are used as Meridian Mail calls are routed to the application
- information required to configure the Meridian 1 for Meridian Mail
- information required to configure Meridian Mail for Host Enhanced Voice Processing (HEVP)
- an overview of using the Edit Voice feature to create voice segment files

Throughout this chapter, figures and tables use the following examples as parameters:

- The primary ACD DN 7650 is defined as the mail queue.
- The mail queue uses four voice channels, and thus has four virtual agent positions assigned to the mail queue, so that the Meridian 1 can identify each channel by its position ID. These position IDs uniquely identify channels in the Meridian 1 configuration. The examples used for mail queue 7650 are as follows:

**Table 135**  
**Examples of Meridian Mail configuration parameters**

Voice channel	Individual DN	Position ID
1	7550	7651
2	7551	7652
3	7552	7653
4	7553	7654

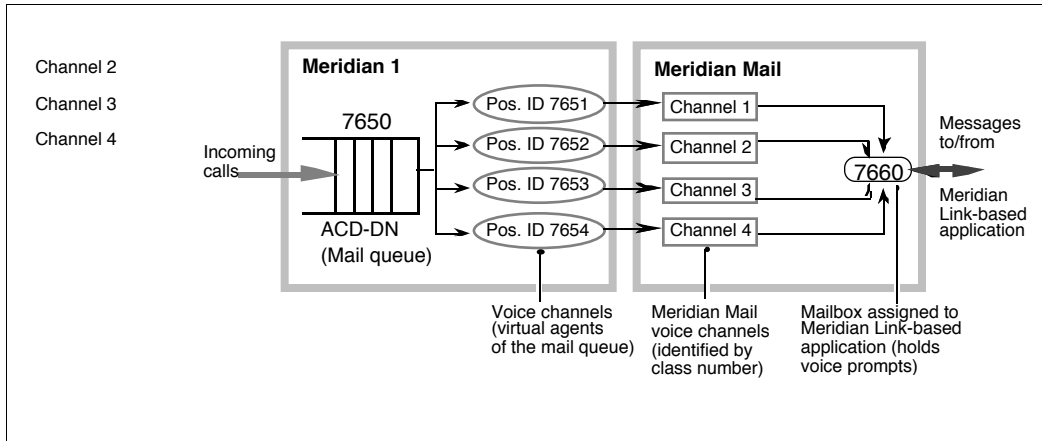
- The DN 7660 is defined as the mailbox assigned to the mail queue for the purpose of holding recorded voice prompts.

Figure 94 gives a visual overview of how mail queue, position ID, channel class, and mailbox ID relate to one another.

## Meridian Mail call processing

Figure 94 shows the relationship between the Meridian 1 and Meridian Mail DN's and voice channels. The Meridian Link-based application separately acquires each channel, identifying it by its channel class. The Meridian Mail system messages also identify calls by the channel class.

**Figure 94**  
**Meridian Mail call processing**



This is how incoming calls are processed:

- An incoming call enters the Meridian Mail ACD DN assigned for use by a Meridian Link-based application, and is held in the mail queue.
- When a voice channel is free, a call held in the mail queue is presented to the channel.
- The Meridian Mail system sends a Call Offered message to the Meridian Link-based application, which must answer the call within 15 seconds.
- Once the call is answered, the application plays voice prompts, collects DTMF digits, and transfers the call to its destination (for example, an ACD DN or CDN).

## Configuring Meridian 1 for Meridian Mail

To configure the Meridian 1 for Meridian Mail, perform the following tasks:

- 1 Create a Meridian Mail ACD queue in Overlay 23.
- 2 Create virtual agents in Overlay 11, assigning them to the Meridian Mail queue.

### Creating a Meridian Mail ACD queue

Reserving an ACD queue for the sole purpose of directing calls to voice channels dedicated to a Meridian Link-based application ensures that all HEVP channels are in their own queue. If the application uses Host Enhanced Routing to direct calls to Meridian Mail, it must do so by routing calls to this ACD DN. The ACD DN number assigned here will also be added to the Meridian Mail VSDN Table.

Table 136 describes how to use Overlay 23 (LD 23) to create a new ACD queue for Meridian Mail. To configure the new ACD queue for Meridian Mail, respond YES to the MWC, IMS, CMS, IMA, and IVMS prompts; and at the VSID prompt, specify the link ID of the Command and Status Link (CSL) to the mail system.

**Table 136**  
**LD 23—Creating an ACD queue for voice channels**

Prompt	Response	Comment
REQ	NEW	Create a new ACD DN
TYPE	ACD	ACD data block
CUST	xxxx	Customer that the Meridian Link-based application will be serving
ACDN	xxxxxxx	An unused DN in the customer's dialing plan. For the example shown in Figure 94, you would enter 7650.
MWC	YES	
— continued —		



**Table 136**  
**LD 23—Creating an ACD queue for voice channels (continued)**

Prompt	Response	Comment
IMS	YES	
CMS	YES	
IMA	YES	
IVMS	YES	
VSID	0–15	Link ID of the CSL to Meridian Mail (defined in Overlay 17)
MAXP	xx	Number of agent positions (one more than the number of channels to be assigned). For the example in Figure 94, you would enter 5.
ALOG	YES	
SDNB	<cr>	
BSCW	<cr>	
RGAI	<cr>	
.		
.		
.		
FCTH	<cr>	
CRQS	<cr>	
— end —		

## Defining virtual agent DNs for voice channels

For each voice channel to be used by a Meridian Link-based application, you must create a virtual ACD agent and assign it to the Meridian Mail ACD queue.

By being defined with Voice Messaging Allowed (VMA) class of service, each ACD agent functions as a Meridian Mail queue. The Key 0 definition specifies the mail queue. These agent positions are “virtual”—that is, no physical equipment is required for the sets defined.

Use Overlay 11 to assign TNs as virtual agents of the mail queue you just defined in Overlay 23, and to assign each to a different voice channel. If the voice channel already exists—and is being reassigned to Meridian 1 Access—locate the Channel DN in the Meridian Mail Channel Allocation Table (CAT) and use that value for the individual DN (IDN) when defining the SCN key. Table 139, in the “Defining voice channels in the Channel Allocation Table (CAT)” section of this chapter, illustrates the CAT.

Table 137 describes how to use Overlay 11 (LD 11) to create and assign Meridian Mail virtual agent positions and relates the parameters configured to the examples used elsewhere in this chapter. Note the following:

- The TN defined for each virtual agent position ID must be the Routing Address assigned to its channel in the CAT.
- The IDN assigned to this channel in Overlay 11 will also be used for the Channel DN in the CAT.
- As for any ACD agent, each virtual agent’s ACD DN and position ID must be defined on key 0. Assign the set to your new mail ACD DN, and give it a unique (with respect to other DNs) position ID.
- You must also define Make Set Busy, Not Ready, Transfer, Conference, SCN, and Release keys on the set.

**Table 137**  
**LD 11—Defining virtual agent DNs for voice channels**

Prompt	Response	Comment
REQ	NEW	Create a new ACD agent
TYPE	SL1	New SL-1 set
TN	l s c u	The virtual agent's routing address on the Meridian 1. If the channel already exists, this value is found in the Channel Allocation Table (CAT). Table 139 uses 10-1-2-3 through 10-1-2-6 as routing addresses for channel DNs assigned to mail queue 7650.
CDEN	<cr>	Meridian Mail voice channels
DES	xxxxx	Set description ("Voice Channel 1," for example)
CUST	x	Customer that the Meridian Link-based application will be serving
KLS	1	For virtual agents, the number of key lamp strips is always 1.
FDN	<cr>	
TGAR	<cr>	
LDN	<cr>	
NCOS	<cr>	
RNPG	<cr>	
SSU	<cr>	
XLST	<cr>	
CLS	VMA	Voice Messaging Allowed (VMA) defines this TN as a virtual agent
HUNT	<cr>	
— continued —		

**Table 137**  
**LD 11—Defining virtual agent DNs for voice channels (continued)**

Prompt	Response	Comment
LHK	<cr>	
TEN	<cr>	
SPID	<cr>	
AST	<cr>	
IAPG	<cr>	
PRI	<cr>	
LANG	<cr>	
KEY	0 ACD xxxxxxx yyyy	Identifies set as agent a Meridian Mail queue Key 0 must be the ACD DN position ID of the virtual agent (as for any ACD agent), where xxxxxxx = ACD DN (the example in Figure 94 and Table 138 is 7650) yyyy = position ID (the examples in Figure 94 are 7651–7654)
KEY	1 SCN xxxxxxx	Assign the secondary (SCN) DN key, where 1 = key number xxxxxxx = Channel DN assigned to this key
KEY	2 MSB	Assign an MSB (Make Set Busy) key where 2 = key number
KEY	3 NRD	Assign an NRD (Not Ready) key where 3 = key number
KEY	6 TRN	Assign a TRN (Transfer) key where 6 = key number
— continued —		

**Table 137**  
**LD 11—Defining virtual agent DNs for voice channels (continued)**

Prompt	Response	Comment
KEY	7 A06	Assign an A06 (6-party conference) key where 7 = key number
KEY	9 RLS	Key 9 should be RLS (Release)
KEY	<cr>	An empty carriage return at the last KEY prompt ends key definition input
— end —		

## Configuring Meridian Mail for Host Enhanced Voice Processing (HEVP)

To configure the Meridian Mail system for the Host Enhanced Voice Processing (HEVP) feature of Meridian Link, perform the following tasks:

1. Add the Meridian Mail ACD DN for HEVP applications to the Meridian Mail VSDN Table.
2. Create and dedicate voice channels for HEVP applications in the Channel Allocation Table (CAT).
3. Define a new mailbox to store voice prompts for the HEVP application.

### Adding the Meridian Mail ACD DN to the Voice Service DN (VSDN) Table

The procedure that follows describes how to add the ACD DN you defined in LD 23 on the Meridian 1 (see “Creating a Meridian Mail ACD queue” earlier in this chapter) to the list of DNs in the Meridian Mail Voice Service DN (VSDN) Table. Table 138 shows examples of entries for each service type (Voice Messaging, Voice Menu, and Meridian 1 Access).

When adding an ACD DN for Meridian Link-based HEVP applications in the VSDN Table, observe the following:

- The service class must be ACC.
- A class number must be entered, but actual linkage between channel class and channel is made in the Channel Allocation Table (CAT), not in the VSDN Table.

*Note:* The VSDN Class field indicates which application will be started, but applications based on Meridian Link use only the CAT linkage. Therefore, the choice of VSDN class number is not important.

### **Procedure to add the Meridian Mail ACD DN to the VSDN Table**

- 1 Log in to Meridian Mail Administration.
- 2 Choose Voice System Administration.
- 3 Choose Voice System Configuration.
- 4 Choose Voice Service DN Table.
- 5 Add a new entry, setting the DN to the ACD DN you created in LD 23 on the Meridian 1.

In Table 138, 7650 is used as an example of the DN. The service is ACC (for ACCess). The class should be set to the lowest channel class you will assign to the Meridian Link-based application. The example mail queue in this chapter uses channel class values 1–4, so the example in Table 138 uses a value of 1.

*Note:* The class number used here has no impact on Meridian Mail call processing, since the association of the call to the Meridian Link-based application is done in the CAT, but using the lowest channel class assigned to the Meridian Link-based application avoids any possible future conflict.

**Table 138**  
**Example of Meridian Mail Voice Service DN (VSDN) Table**

<b>DN</b>	<b>Service</b>	<b>Class</b>
4567	VM	
4568	MS	
7650	ACC	1

VM = service type Voice Messaging  
MS = service type Voice Menu  
ACC = service type Meridian 1 Access

## Defining voice channels in the Channel Allocation Table (CAT)

The Channel Allocation Table (CAT) contains entries for each Meridian Mail voice channel. As shown in Table 139, the CAT stores the following voice channel attributes:

- **Channel Location** is the card location, in the Meridian Mail system, of the voice channel.
- **Routing Address** is the TN defined for the virtual agent set in Overlay 11 on the Meridian 1 (see Table 137).
- **Link Location** is card location, in the Meridian Mail system, of the Command and Status Link (CSL).
- **Link Type** is always CSL.
- **Primary DN** specifies the Meridian Mail ACD DN created in LD 23.
- **Channel DN** is the IDN defined for the channel in LD 11.
- **Service** is always ACC, for Meridian 1 Access.
- **Class** is the lowest unused class number known to Meridian Link.

To assign dedicated channels to the Meridian Link-based application, you must either change existing channel entries or add new ones, such that

- the primary DN for the voice channel is the Meridian Mail ACD queue created in Overlay 23 (see Table 136)
- the service type is ACC (for Meridian 1 Access)
- each dedicated channel has a unique class, which identifies the channel to your application (for shared channels, Class = ALL)

**Note:** If a voice channel is not assigned a class number recognized by an HEVP application, it cannot be acquired during Meridian Mail call processing, and thus receives the default treatment for unacquired Meridian Mail calls.



**Table 139**  
**Example of Meridian Mail Channel Allocation Table (CAT)**

Channel Location	Routing Address	Link Location	Link Type	Primary DN	Channel DN	Service	Class
01-5-1	10-1-2-3	01-1-02	CSL	7650	7550	ACC	1
01-5-2	10-1-2-4	01-1-02	CSL	7650	7551	ACC	2
01-5-3	10-1-2-5	01-1-02	CSL	7650	7552	ACC	3
01-5-4	10-1-2-6	01-1-02	CSL	7650	7553	ACC	4

### Procedure to add channels to Meridian Mail

- 1 Log in to Meridian Mail Administration.
  - If the channel is not already defined, go directly to step 6.
  - If the channel is already defined, first perform steps 2 through 5 to disable the channel.
- 2 Choose System and Status Maintenance from the Main Menu.
- 3 Choose DSP Port Status.
- 4 Disable the channel.
- 5 Return to the Main Menu.
- 6 Choose Voice System Administration.
- 7 Choose Voice System Configuration/Voice Menu Application Administration.
- 8 Choose Channel Allocation Table.
- 9 If the channel is not defined, add a new channel.
- 10 Set the Primary DN to the ACD DN you created for the Meridian Mail ACD queue in Overlay 23 on the Meridian 1.
- 11 Set the Channel DN to the IDN you assigned to the virtual agent in Overlay 11 on the Meridian 1.
- 12 Set the Channel Location to its board location in the Meridian Mail system.

- 13 Set the Service to ACC.
- 14 Set the Channel class to an unused class number.  
Class numbers should start with 1 and be used in sequence, because the application must use the class numbers both to obtain access to the voice port and to identify activity on it.

### **Defining a new mailbox for the application**

To create a mailbox, you must define a new Meridian Mail user. The Meridian Link-based application must know the mailbox number and password in order to log in to the mailbox. The operator using the Meridian Link Edit Voice feature to create and edit voice segment files must also know the mailbox number and password.

When adding a new mailbox, note that the mailbox number must not conflict with a DN existing on the Meridian 1.

*Note:* Although a Meridian 1 DN may be assigned to the mailbox, sharing a mailbox between an HEVP application and normal voice mail users does not absolutely ensure that processing conflicts are avoided. For example, if the DN assigned to the mailbox is unique with respect to other DNs, it can never be used as anyone's personal extension.

### **Procedure to add a new mailbox to the Meridian Mail system**

- 1 Log in to Meridian Mail Administration.
- 2 Choose User Administration.
- 3 Choose Add New User.
- 4 Press the [Add Local Voice User] softkey to display the required screen.

Figure 95 shows the Add Local Voice User screen. Note that the Location Prefix field is present only in networked Meridian Mail systems.

**Figure 95**  
**Meridian Mail Add Local Voice User screen**

User Administration			
Add Local Voice User			
Mailbox Number:	7660	Volume ID:	2
*Location Prefix:	Location Name: Yourtown, USA		
Last Name:	LinkMailBox		
First Name:	Meridian		
Department:	for voice processing application		
Extension DNs:	7660		
Revert DN:	0		
User Model:	Standard	Executive	Secretary
Personal Verification Recorded (Voice):	No		

- 5 Fill in the mailbox number and put descriptive comments in the First Name and Last Name fields. Take the default values for everything else. You can use the Mailbox Number as the Extension DN, since it will not be used (it must not conflict with an existing DN).
- 6 Press the [Change User password] softkey and set the mailbox password.
- 7 If necessary, use the [Change Defaults] softkey to allocate additional storage space on disk for the application's voice file(s).



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## Chapter 14: Software installation, upgrade, and update procedures

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This chapter describes how to

- initially configure a new IPE Module or the Application Module  
*Note:* If a redundant Meridian Link is required, a second module must be installed and configured separately.
- properly power down
- upgrade from one release to another
- update from one issue of a release to another issue of the same release

### ATTENTION

Before proceeding with any software installation, upgrade, or update, ensure that all discrepancies found in Chapter 6, “Site survey/ installation checklist” have been corrected.

The operating system and application software on the IPE Module or the Application Module are installed at the factory. When the module is installed at your site

- enter a keycode to activate the correct application or applications
- configure the new module
- change some link parameters, if necessary

The keycode is provided as part of the software package and is tailored to your site's requirements. The keycode consists of five groups of four hexadecimal characters.

You will have received the following tapes with your IPE Module or Application Module:

- Tape 1 contains the base operating system (BOS)
- Tape 2 contains all application software

Once your link configuration and other setup are correct, you should use a blank tape and execute the backdata command to make a backup tape of your system configuration.

**Note:** Use a 600-Mbyte tape with the IPE Module and a 155-Mbyte tape with the Application Module.

If you need to power down the IPE Module or the Application Module, you must power down the application or applications correctly to allow the software to shut down and the disk and file system to reach a safe state. If you do not power down the system correctly, automatic diagnostic software will be invoked when the system reboots in an attempt to repair any possible damage. In general it is recommended strongly that the correct powerdown procedure be used.

**Note:** After completing a software installation procedure, proceed to Chapter 18, "Acceptance testing," to ensure that the installation was successful.

Depending on the tape and release of the software you have currently installed, you can use one of several ways to upgrade or update your software. The following table shows where you can find the information you need to upgrade or update your software.

**Table 140**  
**Software installation and upgrade paths**

From	To	Covered in ...
Meridian Link Release 2	Meridian Link Release 5C	Section 1: To upgrade Meridian Link from Release 2 to Release 5C or Co-residency using a Release 2 backup tape
Meridian Link Release 2	Co-residency (Meridian Link 5C and CCR 3C)	Section 1: To upgrade Meridian Link from Release 2 to Release 5C or Co-residency using a Release 2 backup tape
Meridian Link Release 3	Meridian Link Release 5C	Section 2: To upgrade Meridian Link from Release 3 to Release 5C or Co-residency using a Release 3 backup tape
Meridian Link Release 3	Co-residency (Meridian Link 5C and CCR 3C)	Section 2: To upgrade Meridian Link from Release 3 to Release 5C or Co-residency using a Release 3 backup tape
Meridian Link Release 4	Meridian Link Release 5C	Section 3: To upgrade Meridian Link from Release 4 to Release 5C
Meridian Link Release 4	Co-residency (Meridian Link 5C and CCR 3C)	Section 4: To upgrade Meridian Link from Release 4 to Co-residency
Meridian Link Release 4B	Meridian Link Release 5C	Section 5: To upgrade Meridian Link from Release 4B to Release 5C
Meridian Link Release 4B	Meridian Link Release 5C and Co-residency (Meridian Link 5C and CCR 3C)	Section 6: To upgrade Meridian Link from Release 4B to Release 5C and Co-residency
Meridian Link Release 5	Meridian Link Release 5C	Section 7: To update Meridian Link from Release 5 to Release 5C
Meridian Link Release 5	Co-residency (Meridian Link 5C and CCR 3C)	Section 8: To update Meridian Link from Release 5 to Co-residency
<b>— continued —</b>		

**Table 140**  
**Software upgrade paths (continued)**

From	To	Covered in section
Upissue of Meridian Link Release 5	Meridian Link Release 5C	Section 7: To update Meridian Link from Release 5 to Release 5C
Upissue of Meridian Link Release 5	Co-residency (Meridian Link 5C and CCR 3C)	Section 8: To update Meridian Link from Release 5 to Co-residency
CCR Release 2	CCR Release 3C	Section 9: To upgrade CCR from Release 2 to Release 3C or Co-residency using a Release 2 backup tape
CCR Release 2	Co-residency (Meridian Link 5C and CCR 3C)	Section 9: To upgrade CCR from Release 2 to Release 3C or Co-residency using a Release 2 backup tape
CCR Release 3	CCR Release 3C	Section 10: To update CCR from Release 3 to Release 3C
CCR Release 3	Co-residency (Meridian Link 5C and CCR 3C)	Section 11: To update CCR from Release 3 to Co-residency
CCR Release 3B	CCR Release 3B	Section 12: To update CCR Release 3B to Release 3C
CCR Release 3B	Co-residency (Meridian Link 5C and CCR 3C)	Section 13: To update CCR from Release 3B to Co-residency
Co-residency	Up-issue of Co-residency (Meridian Link 5C and CCR 3C)	Section 14: To update Co-residency from one issue to another issue of the same release
— end —		



## **To configure the software after installing a new IPE Module or Application Module**

The UNIX and application software are loaded onto the hard disk at the factory. Tapes containing the same software are shipped with your module as a backup. A blank tape is needed to back up configuration data and scripts.

When power is applied to the IPE Module or the Application Module, the system boots up from the software loaded on the hard disk. Power also activates the yellow LED on the SBC card in the IPE Module or the Application Module. As long as this LED blinks intermittently, the system is loading properly. If the LED remains dark or steadily lit (for 30 seconds or more), there is a fault in the installed cards.

To configure the software after installing a new IPE Module or Application Module

- Perform Procedure 1: Application configuration and start-up, in this chapter.
- Check that the values of the default link parameters match the values in Chapter 15, “Link configuration.” If you need to change any link parameters, perform the procedures described in Chapter 15, “Link configuration.”

## Section 1: To upgrade Meridian Link from Release 2 to Release 5C or Co-residency using a Release 2 backup tape

If you already have Meridian Link Release 2 and want to upgrade to Meridian Link Release 5C or Co-residency

- Ensure that your backup is current so that you will not lose any configuration and data information when you format the hard disk.
- Install the operating system and all applications.
- Enter a keycode to activate the appropriate application or applications.

To do this,

- Perform Procedure 11: Back up configuration files and data files

*Note:* At this point, Release 2 is still installed, so you are backing up Release 2 files. Procedure 11 in this manual, although intended for Release 5C, can be used to back up Release 2 files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.

- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system.
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct.
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release.

## Section 2: To upgrade Meridian Link from Release 3 to Release 5C or Co-residency using a Release 3 backup tape

If you already have Meridian Link Release 3 and want to upgrade to Meridian Link Release 5C or Co-residency:

- Ensure that your backup is current so that you will not lose any configuration and data information when you format the hard disk.
- Install the operating system and all applications.
- Enter a keycode to activate the appropriate application or applications.

To do this,

- Perform Procedure 11: Back up configuration and data files.

*Note:* At this point, Release 3 is still installed. Procedure 11, although intended for Release 5C, can be used to back up Release 3 files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.

- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release

### Section 3: To upgrade Meridian Link from Release 4 to Release 5C

If you have Meridian Link Release 4 and want to update to Release 5C, you must install the operating system, install the application, and then enter a keycode to activate it.

To do this:

- Perform Procedure 11: Back up configuration and data files.  
*Note:* At this point, Release 4 is still installed. Procedure 11, although intended for Release 5C, can be used to back up Release 4 files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.
- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 3: Load the application software from tape.

## Section 4: To upgrade Meridian Link from Release 4 to Co-residency

If you have Meridian Link Release 4 and want to upgrade to co-residency, you must install the operating system and install all applications. Then you must enter a keycode to activate Meridian Link and CCR. Notice that, in this case, you automatically upgrade Meridian Link to Release 5C.

To do this,

- Perform Procedure 11: Back up configuration and data files.

*Note:* At this point, Release 4 is still installed. Procedure 11, although intended for Release 5C, can be used to back up Release 4 files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.

- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 3: Load application software from tape.

## Section 5: To upgrade Meridian Link from Release 4B to Release 5C

If you have Meridian Link Release 4 and want to update to Release 5C, you must install the operating system tape, install the application, and then enter a keycode to activate it.

To do this:

- Perform Procedure 11: Back up configuration and data files.  
*Note:* At this point, Release 4B is still installed. Procedure 11, although intended for Release 5C, can be used to back up Release 4B files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.
- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 3: Load application software from tape.

## Section 6: To upgrade Meridian Link from Release 4B to Release 5C and Co-residency

If you have Meridian Link Release 4B and want to upgrade to Release 5C and co-residency, you must install the operating system, then applications. Then you must enter a keycode to activate CCR and Meridian Link.

To do this,

- Perform Procedure 11: Back up configuration and data files.  
*Note:* At this point, Release 4B is still installed. Procedure 11, although intended for Release 5C, can be used to back up Release 4B files. Ignore any differences between the messages shown in Procedure 11 and the messages you see.
- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 3: Load application software from tape.

## **Section 7: To update Meridian Link from Release 5 to Release 5C**

When you update Meridian Link from Release 5 to Release 5C, the release or issue of the BOS changes.

- Perform Procedure 2: Start the update process.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system tape on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system.
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct.
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release.

## **Section 8: To update Meridian Link from Release 5 to Co-residency**

If you have Meridian Link Release 5 and want to upgrade to co-residency, you must install the application. Then you must enter a keycode to activate CCR and Meridian Link.

To do this:

- Perform Procedure 2: Start the update process.
- Perform Procedure 3: Load the application software from tape.



## Section 9: To upgrade CCR from Release 2 to Release 3C or Co-residency using a Release 2 backup tape

If you already have CCR Release 2 and want to upgrade to CCR Release 3C or co-residency, do the following

- Before upgrading, back up your script files so that you will not lose any script information when you format the hard disk.
- Install the operating system and all applications.
- Enter a keycode to activate the appropriate application or applications.

*Note:* If you upgrade to co-residency, you activate Meridian Link Release 5C and CCR Release 3C by entering the appropriate keycode.

To do this,

- Perform Procedure 4: Power down the IPE Module or the Application Module.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system tape on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system.
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct.
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release.

### **Section 10: To update CCR from Release 3 to Release 3C**

If you already have CCR Release 3 and want to update to Release 3C, you must install the application and then enter a keycode to activate it.

To do this,

- Perform Procedure 2: Start the update process.
- Perform Procedure 3: Load application software from tape.

### **Section 11: To update CCR from Release 3 to Co-residency**

If you already have CCR Release 3 and want to upgrade to co-residency, you must install all applications. Then you must enter a keycode to activate CCR and Meridian Link. Notice that, in this case, you automatically update CCR to Release 3C.

To do this,

- Perform Procedure 2: Start the update process.
- Perform Procedure 3: Load application software from tape.

## **Section 12: To update CCR Release 3B to Release 3C**

When you update CCR from Release 3B to Release 3C, the release or issue of the BOS changes.

- Perform Procedure 2: Start the update process.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system tape on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system.
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct.
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release.

## **Section 13: To update CCR from Release 3B to Co-residency**

If you already have CCR Release 3B and want to update to co-residency, you just enter a new keycode to activate CCR and Meridian Link.

To do this, perform Procedure 1: Application configuration and start-up.

## **Section 14: To update Co-residency from one issue to another issue of the same release**

When you update Co-residency from one issue of a release to another issue of the same release (for example, from issue 6.2 to issue 6.4), one of the following circumstances applies:

- The release or issue of the BOS changes
- The release or issue of the BOS does not change

If the release or issue of BOS changes,

- Perform Procedure 2: Start the update process.
- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system tape on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape to customize your system.
- Perform Procedure 10: Verify the installation to confirm that the installation is complete and correct.
- Perform Procedure 11: Back up configuration files and data files to back up the customized new release.

If the release or issue of BOS does not change,

- Perform Procedure 2: Start the update process.
- Perform Procedure 3: Load application software from tape.

### **Section 15: Activating or de-activating a Meridian Link or CCR feature**

If you wish to activate or de-activate a feature (for example, you wish to activate Ethernet LAN support), perform Procedure 1: Application configuration and start-up.

### **Section 16: To install or reinstall the software from tape**

If you must install or reinstall the software from tape (for example, after replacing the hard drive), change the serial number, change the subnet mask, change the default router address, or activate or de-activate features using the keycode, do the following:

- Perform Procedure 4: Power down the IPE Module or the Application Module.

- Depending on the type of SBC card installed, perform one of the following:
  - Procedure 5: Load the operating system tape on an Application Module with an MVME147 card
  - Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card
- Perform Procedure 7: Reboot and go through setup.
- Perform Procedure 8: Load the application software from tape.
- Perform Procedure 9: Restore configuration files and data files from the backup tape (if available).

**Note:** Input at the system console must be in lowercase letters, or mixed case if necessary. If the system responds in uppercase prompts preceded by a backslash (“\PASSWORD:” for example), log out. Reset caps lock; enter **Ctrl-d** so that the “Console login:” prompt appears.



**CAUTION**

**Risk of potential data loss**

In case of hard disk failure, your configuration files and data files will be lost. Therefore, you should back up these files as soon as you get your Meridian Link system set up. To do this, perform Procedure 11: Back up configuration files and data files.

## Procedure 1: Application configuration and start-up

- 1 Set the Application Module circuit breaker or the IPE Module power pushbutton to ON (if it is not already on).  
Wait for the system to boot UNIX from the hard disk. If the “Console Login:” prompt does not appear, refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (NTP 553-3211-510).
- 2 Type **maint** and press [Return] at the “Console Login:” prompt to log in as the maintenance user.
- 3 You are prompted to enter a password. Type the password for the maint account and press [Return]. The password for maint is **maint**.
- 4 At the “maint>” prompt, type **install** and press [Return].

**Figure 96**  
**Tape prompt**

```
You can reconfigure the system using a keycode without a tape or you can use a
tape to upgrade the software and reconfigure. Do you want to use a tape (y/n/q)?
```

- 5 You are prompted to use a tape (Figure 96). Type **n** and press [Return].

**Figure 97**  
**Meridian 1 ID prompt**

```
Please enter the Meridian 1 ID of this site
(or Q or q to quit):
```

- 6 You are prompted to enter your Meridian 1 ID (Figure 97). Type your ID and press [Return].

**Procedure 1: Application configuration and start-up (continued)**

**Note:** If you make a mistake while typing your Meridian ID or keycode, do not try to backspace and correct the error. Instead, continue until step 15, where you will be able to type n, press [Return] and return to step 6.

**Note:** Input for the Meridian ID is case sensitive; input for the keycode is not case sensitive.

**Figure 98**  
**Keycode prompt 1**

```
Please enter your key code (5 groups of 4 characters each):  
Keycode group 1 (or Q or q to quit):
```

- 7 You are prompted to enter your keycode (Figure 98). Type the first four-character group of your keycode and press [Return].

**Figure 99**  
**Keycode prompt 2**

```
Keycode group 2 (or Q or q to quit):
```

- 8 You are prompted for the second group of keycode characters. Type the second group and press [Return].

**Figure 100**  
**Keycode prompt 3**

```
Keycode group 3 (or Q or q to quit):
```

- 9 You are prompted for the third group of keycode characters. Type the third group and press [Return].

**Procedure 1: Application configuration and start-up (continued)**

**Figure 101  
Keycode prompt 4**

```
Keycode group 4 (or Q or q to quit):
```

- 10** You are prompted for the fourth group of keycode characters. Type the fourth group and press [Return].

**Figure 102  
Keycode prompt 5**

```
Keycode group 5 (or Q or q to quit):
```

- 11** You are prompted for the fifth group of keycode characters. Type the fifth group and press [Return].

A list of configured applications appears.

**Note:** Optional feature prompts will not appear if the features were not configured in the keycode. For example, if Meridian Link was not purchased, the prompts in Figures 103, 104, and 105 will not appear.

**Figure 103  
Meridian Link protocol prompt**

```
Please enter the Meridian Link protocol, x for X.25, <cr> for TCP/IP:
```

- 12** If you are activating the Meridian Link application, you are prompted to enter the Meridian Link protocol.

If you are using the X.25 protocol, type **x**, press [Return], then go to step 15.

If you are using the TCP/IP protocol, press [Return], then go to step 13.



### Procedure 1: Application configuration and start-up (continued)

#### Figure 104 IP address prompt

```
Meridian Link using a TCP/IP connection.
```

```
If you would like a default gateway IP address configured or changed, please
enter the IP address in internet dot notation (e.g. 47.82.45.10). For no change
enter <cr>:
```

- 13 To configure or change a default gateway IP address, type the IP address in the proper format and press [Return]. If no modification or configuration is required, simply press [Return].

#### Figure 105 Subnet mask prompt

```
Saving default gateway IP address:
```

```
If you would like a default subnet mask configured or changed,
please enter the subnet mask (e.g. 255.255.0.0). For no change enter <cr>:
```

- 14 To configure or change a default subnet mask, type the subnet mask address in decimal format and press [Return]. If no modification or configuration is required, simply press [Return].

#### Figure 106 List verification prompt

```
Saving default subnet mask:
```

```
The following applications are configured:
Meridian Link
Large CCR
```

```
The following packages are configured:
1
96
97
98
99
100
101
```

```
Ethernet NSE software is enabled.
```

```
Is this correct (y/n/q)?
```

**Procedure 1: Application configuration and start-up (continued)**

The system lists the application or applications installed.

**Note:** Figure 106 only shows applications that have been selected; they are actually enabled when the system reboots at the end of this procedure.

- 15** The system prompts you to verify that the list is correct.

To check that the correct application has, or applications have, been activated, refer to the checklist (Table 17) you completed in the “IPE Module and Application Module: Meridian Link/CCR software” section in Chapter 6, “Site survey/installation checklist.”

If the list is incorrect, type **n** and press [Return]. You are returned to step 6. Rekey your Meridian ID and keycode. If the list of applications is still incorrect, type **q** and press [Return]. The message “Software not configured” appears. Call your Nortel support personnel for a new keycode.

If the list is correct, type **y** and press [Return].

If you did not purchase CCR or NSE, go to step 21.

If you did not purchase CCR but you have enabled NSE, go to step 17. For more information about Ethernet connections, refer to “Installing Ethernet LAN support” in Chapter 9, “Meridian Link/CCR interface cabling.”

If you have purchased CCR, go to step 16.

**Figure 107**  
**CCR customer number prompt**

Please enter the CCR customer number (0-99):
--

- 16** You are prompted to enter your CCR customer number (Figure 138). Type the number and press [Return].

**Note:** A two-minute pause occurs at this point before the following messages appear.

**Procedure 1: Application configuration and start-up (continued)**

**Figure 108**  
**Ethernet connection prompt**

```
Installing NSE R3V7.1. Please wait.  
Is your module connected to the Ethernet (y/n) ?
```

- 17** You are asked whether your Application Module or IPE Module is connected to Ethernet (Figure 108).
- For more information about Ethernet connections, refer to Chapter 9, “Meridian Link/CCR interface cabling”.
- If your module is not connected to Ethernet, type **n** and press [Return]. Go to step 21.
- If you are connected to Ethernet and you plan to use it in the near future, type **y** and press [Return]. You see a message asking you to wait. Then you see more installation messages (Figure 109). Go to step 18.
- If you are connected to Ethernet but do not plan to use it in the near future, you may choose to type **n** and press [Return]. Disabling Ethernet support increases the processing power available to your application(s). Go to step 21.

**ATTENTION**

If you disable Ethernet support, you must perform a complete reinstallation of the base operating system and application(s) before you can reenable Ethernet support.

**Procedure 1: Application configuration and start-up (continued)****Figure 109**  
**Software install messages**

```

Configuring your system for NSE. Please wait.
/usr/src/uts/m68k/sysgen/sysgen -l /usr/src/uts/m68k/sysgen -big
    make -f io.mk MAKE=make FRC= DASHG= DASHO=-O INCRT=/usr/include
LIBDIR=./cf SYS= CFLAGS= -O -I/usr/include -DLAI -DINKERNE
L -DSTREAMS -DBRIDGE CPU=m68k CC=/bin/pcc/cc
    make -f scsi.mk "MAKE=make" "CC=/bin/pcc/cc" "FRC=" "INCRT=/usr/include"
"DASHO=-O" "CFLAGS=-O -I/usr/include -DLAI -DINKER
.
.
.

Warning: ./config.h: 358: NBLK4 redefined
    rm -f sysV68 sysV68.nm
    ld -o sysV68 ld.VME131 m68kvec.o low.o conf.o lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tc
pip lib.nfs lib.bppv2 lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scsi
lib.wan lib.x25 lib.stub lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tcpip lib.nfs lib.bppv2
lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scs
i lib.wan lib.x25 lib.stub
    mcs -da "SYSTEM V/68 - R3V7" sysV68
    chmod 755 sysV68
    ../kdb/kdbnm -q sysV68
../kdb/kdbnm: not enough space for symbol table
../kdb/kdbnm: need total of 145908 bytes at k_syntab
../kdb/kdbnm: 135168 bytes were reserved for symbols, 135168 bytes were used
sysV68 made.

```

**Figure 110**  
**Module name prompt**

```

ADD MODULE NAME AND ADDRESS TO TCPIP TRANSPORT PROVIDER DATABASE

If you are not sure how to answer any prompt, type "?" for HELP.

Your module's system is currently the default name. We recommend that you change
it to avoid possible name conflicts.

Enter the MODULE NAME to be added to the tcpip transport provider database
(?, or module name):

```

- 18** You are prompted for the name of the Application Module or IPE Module. (The term “module name” refers to an Ethernet host computer, which in this case is the Application Module or IPE Module.) Type the module name and press [Return]. The module name must not exceed eight alphanumeric characters. For more information about module names, consult your network administrator.

### Procedure 1: Application configuration and start-up (continued)

#### Figure 111 Module address prompt

```
Enter the MODULE ADDRESS to be added to the tcpip transport provider database
(?, or module address):
```

- 19** You are prompted for the address of the Application Module or IPE Module (Figure 142). Type the module address and press [Return]. The module address must be four numbers separated by periods, such as “12.234.67.89”. For more information about module addresses, consult your network administrator.

#### Figure 112 Reenter prompt

```
If you made any mistakes in entering the module name and IP address, you can
correct them. Would you like to re-enter the module name or IP address? [y,n]:
```

- 20** You are asked whether you want to reenter the module name or address (Figure 112).
- If you have not made a mistake, type **n** and press [Return]. Go to step 21.
- If you want to reenter the module name and address, type **y** and press [Return]; you will return to step 18.

#### Figure 113 Reboot prompt

```
Entry for <module name> with address <address> added to tcpip transport provider
database.

Now your system has been modified. You must reboot the system to have the new
kernel take effect.

Would you like to reboot the system now (y/n) ?
```

**Procedure 1: Application configuration and start-up (continued)**

- 21 You are prompted to reboot the system (Figure 144). Type **y** and press [Return].

The appearance of the “Console Login:” prompt indicates that the new package is now installed. You may now log in to the system to perform other commands. You may also restore configuration files and data files from backup if necessary (Procedure 8: Restore configuration files and data files from the backup tape).

- 22 For security, change the maint and other appropriate passwords. To do this, log in as **maint**. The default password is **maint**.

The prompts are shown in Figure 114 with your input in bold. Substitute your password for the xxxxx.

**Figure 114**  
**Change password prompts**

```
maint> chgpaswd
These login IDs may be changed:
  maint
  mlusr
  ccusr

Enter user's login ID [?, q]: maint
New password: XXXXX
Re-enter new password: XXXXX
Do you want to change the password on
another login? [y, n, q] n
```

- 23 If you have just installed a new IPE Module or Application Module, go to Chapter 15, “Link configuration” to continue the configuration and start-up process.

If you have just added Meridian Link Release 5C or CCR Release 3C, you can now use it.

## Procedure 2: Start the update process

This procedure describes how to begin the update process. If you intend to back up your configuration files and data files, ensure that you have a blank write-enabled tape available before you start this procedure. If you do not intend to back up your configuration files and data files, start at step 4.

- 1 Log in as **maint**. The default password is **maint**.
- 2 Use the **backdata** command to back up all configuration files and data files (see Procedure 11: Back up configuration files and data files).
- 3 Type **install** and press [Return].

### Figure 115 Install command prompt

```
You can reconfigure the system using a keycode without a tape or you can use a
tape to upgrade the software and reconfigure. Do you want to use a tape (y/n/q)?
```

- 4 You are prompted to use a tape (Figure 115). Type **y** and press [Return].

### Figure 116 Drive selection menu

```
Select which drive to use:
1 ctape           2 diskette1       3 hddiskette1
Enter a number, a name, the initial part of a name, or
? for HELP, q to QUIT:
```

- 5 At the drive selection menu, type **1** and press [Return] to select the cassette tape drive.

The message shown in Figure 117 appears.

**Procedure 2: Start the update process (continued)**

**Figure 117**  
**Tape insertion message screen**

```
Insert the removable medium for the package you want to install
into the ctape drive.

Press <RETURN> when ready. Type q to quit.
```

At this point the system is ready to be updated from a tape.

**Note:** Procedure 3 describes how to load the application software from tape. Procedures 5 and 6 describe how to load the BOS from tape, depending on whether your Application Module is equipped with an MVME147 or an MVME167 SBC card.



### Procedure 3: Load application software from tape

This procedure describes how to insert the tape cartridge and load the application software. The procedure assumes you have just performed Procedure 2 to start the update process.



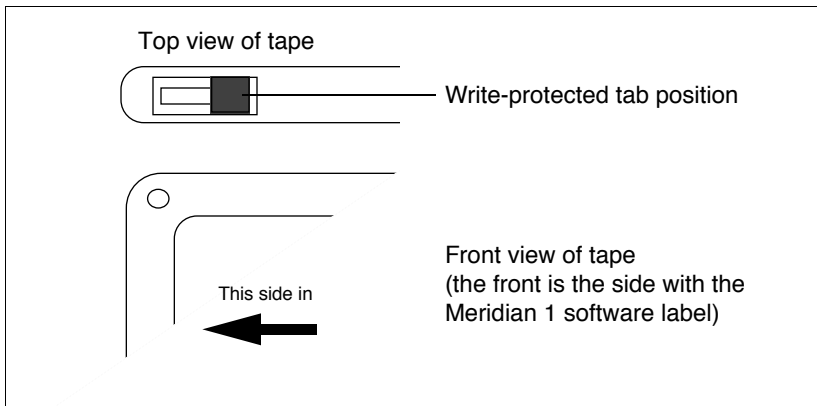
#### CAUTION

##### Risk of accidental overwriting of data on tape

The application tape cartridge *must* be write-protected before you insert it into the tape drive.

Figure 118 shows the write-protect tab position for the software tape cartridge. If the tape is held upright, the tab is located on the top right.

**Figure 118**  
Write-protecting the cartridge tape

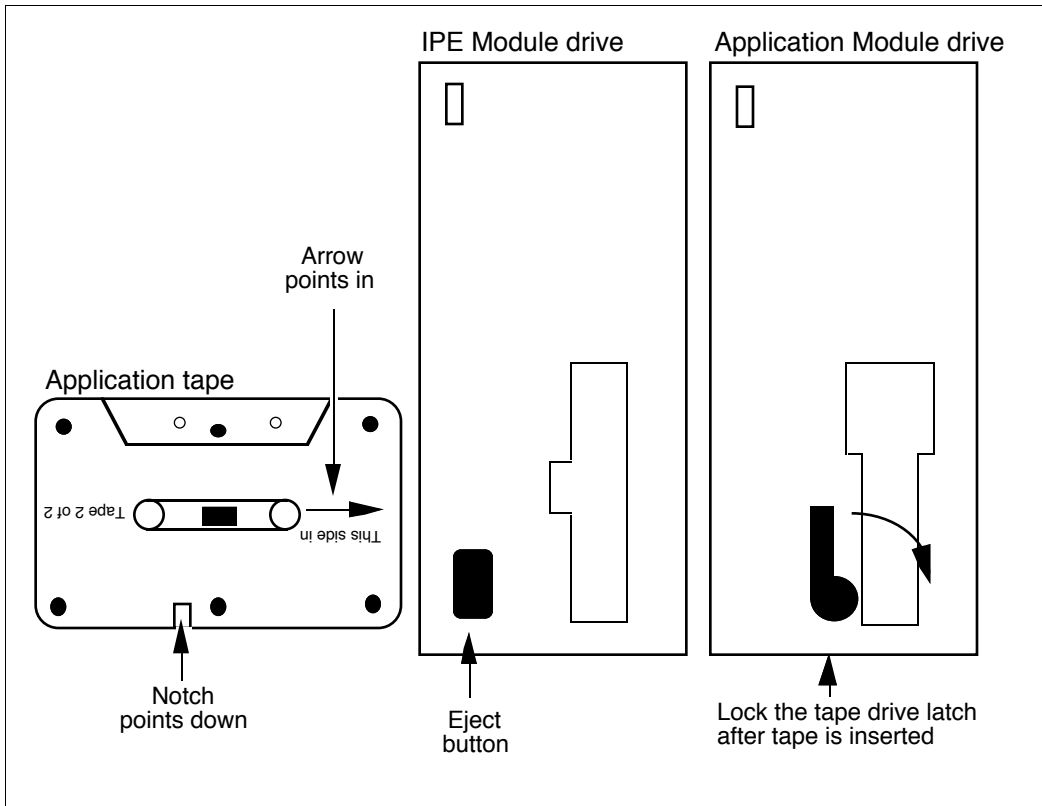


**Procedure 3: Load application software from tape (continued)**

- 1 Insert the tape (marked Tape 2 of 2) into the tape drive as shown in Figure 119.

Ensure that the tape drive latch (if present) is fully closed after the tape is inside. Once the tape is inserted correctly and the latch completely closed, the tape active indicator light will come on briefly, flicker a few times, then go out again.

**Figure 119**  
**Inserting cassette tape in tape drive**



**Procedure 3: Load application software from tape (continued)**

**ATTENTION**

Do not attempt to press a keyboard key until the tape active indicator light goes *from on to off* and stays off. The tape drive can enter a nonoperational state if operations are attempted before the drive is completely ready.

- 2 When the tape indicator light is off, press [Return] to start the auto-loading of the application software.  
After a few moments a message appears, saying “Installing Meridian Applications. Press <RETURN> to continue, type q to quit.”
- 3 Press [Return].  
Figure 120 shows software install messages. If an error occurs, contact your Nortel support personnel.

**Figure 120**  
**Software install messages 1**

```
170 blocks
Preparing for installation. Please wait.
10 blocks
30 blocks
7780 blocks
1100 blocks
110 blocks
1080 blocks
2080 blocks
430 blocks
11000 blocks
11320 blocks
```

. (A series of messages appear on the screen.)

```
.
Installation Complete.
Host based X.25 is installed.

Setting file permissions and ownerships. Please wait.
Setting file permissions and ownerships completed.

06/01/94 19:56:44 Invoking maint
```

**Procedure 3: Load application software from tape (continued)**

**Figure 121**  
**Meridian 1 ID prompt**

Please enter the Meridian 1 ID of this site:  
(or Q or q to quit)

- 4 You are prompted to enter your Meridian 1 ID (Figure 121). Type your ID and press [Return].

**Note:** If you make a mistake while typing your Meridian ID or keycode, do not try to backspace and correct the error. Instead, continue until step 13, where you will be able to type n, press [Return], and return to step 4.

**Note:** Input for the Meridian ID is case sensitive; input for the keycode is not case sensitive.

**Figure 122**  
**Keycode prompt 1**

Please enter your key code (5 groups of 4 characters):  
Keycode group 1 (or Q or q to quit):

- 5 You are prompted to enter your keycode (Figure 122). Type the first fours-character group of your keycode and press [Return].

**Figure 123**  
**Keycode prompt 2**

Keycode group 2 (or Q or q to quit):

- 6 You are prompted for the second group of keycode characters (Figure 123). Type the second group and press [Return].

### Procedure 3: Load application software from tape (continued)

**Figure 124**  
**Keycode prompt 3**

```
Keycode group 3 (or Q or q to quit):
```

- 7 You are prompted for the third group of keycode characters (Figure 124). Type the third group and press [Return].

**Figure 125**  
**Keycode prompt 4**

```
Keycode group 4 (or Q or q to quit):
```

- 8 You are prompted for the fourth group of keycode characters (Figure 125). Type the fourth group and press [Return].

**Figure 126**  
**Keycode prompt 5**

```
Keycode group 5 (or Q or q to quit):
```

- 9 You are prompted for the fifth group of keycode characters (Figure 126). Type the fifth group and press [Return].

A list of configured applications appears.

**Note:** Optional feature prompts will not appear if the features were not configured in the keycode. For example, if Meridian Link was not purchased, the prompts in Figures 127, 128, and 129 will not appear.

**Figure 127**  
**Meridian Link protocol prompt**

```
Please enter the Meridian Link protocol, x for X.25, <cr> for TCP/IP):
```

**Procedure 3: Load application software from tape (continued)**

- 10** If you are activating the Meridian Link application, you are prompted to enter the Meridian Link protocol.

If you are using the X.25 protocol, type **x**, press [Return], then go to step 13.

If you are using the TCP/IP protocol, press [Return], then go to step 11.

**Figure 128**  
**IP address prompt**

```
Meridian Link using a TCP/IP connection.
```

```
If you would like a default gateway IP address configured or changed, please
enter the IP address in internet dot notation (e.g. 47.82.45.10). For no change
enter <cr>:
```

- 11** To configure or change a default gateway IP address, type the IP address in the proper format and press [Return]. If no modification or configuration is required, simply press [Return].

**Figure 129**  
**Subnet mask prompt**

```
Saving default gateway IP address:
```

```
If you would like a default subnet mask configured or changed,
please enter the subnet mask (e.g. 255.255.0.0). For no change enter <cr>:
```

- 12** To configure or change a default subnet mask, type the subnet mask address in decimal format and press [Return]. If no modification or configuration is required, simply press [Return].

### Procedure 3: Load application software from tape (continued)

**Figure 130**  
**List verification prompt**

```
Saving default subnet mask:

The following applications are configured:
Meridian Link
Large CCR

The following packages are configured:
1
96
97
98
99
100
101

Ethernet NSE software is enabled.

Is this correct (y/n/q)?
```

The system lists the application or applications installed.

**Note:** Figure 130 only shows applications that have been selected; they are actually enabled when the system reboots at the end of this procedure.

- 13** The system prompts you to verify that the list is correct.

To check that the correct application has, or applications have, been activated, refer to the checklist (Table 17) you completed in the “IPE Module and Application Module: Meridian Link/CCR software” section in Chapter 6, “Site survey/installation checklist.”

If the list is incorrect, type **n** and press [Return]. You are returned to step 4. Rekey your Meridian ID and keycode. If the list of applications is still incorrect, type **q** and press [Return]. The message “Software not configured” appears. Call your Nortel support personnel for a new keycode.

If the list is correct, type **y** and press [Return].

If you did not purchase CCR or NSE, go to step 20.

**Procedure 3: Load application software from tape (continued)**

If you did not purchase CCR but you have enabled NSE, go to step 16. For more information about Ethernet connections, refer to “Installing Ethernet LAN support” in the “Meridian Link/CCR interface cabling.”

If you have purchased CCR, go to step 14.

**Figure 131  
CCR customer number prompt**

```
Please enter the CCR customer number (0-99):
```

- 14** You are prompted to enter your customer number (Figure 131). Type the customer number and press [Return].

**Note:** A two-minute pause occurs at this point before the following messages appear.

**Figure 132  
Ethernet connection prompt**

```
Installing NSE R3V7.1. Please wait.  
Is your module connected to the Ethernet (y/n) ?
```

- 15** You are asked whether your Application Module or IPE Module is connected to Ethernet (Figure 132).  
For more information about Ethernet connections, refer to Chapter 9, “Meridian Link/CCR interface cabling.”

If your module is not connected to Ethernet, type **n** and press [Return]. Go to step 19.

If you are connected to Ethernet and you plan to use it in the near future, type **y** and press [Return]. You see a message asking you to wait. Then you see more installation messages (Figure 133). Go to step 16.



**Procedure 3: Load application software from tape (continued)**

If you are connected to Ethernet but do not plan to use it in the near future, you may choose to type **n** and press [Return]. Disabling Ethernet support increases the processing power available to your application(s). Go to step 19.

**ATTENTION**

If you disable Ethernet support, you must perform a complete reinstallation of the base operating system and application(s) before you can reenable Ethernet support.

**Figure 133**  
**Software install messages 2**

```
Configuring your system for NSE. Please wait.
/usr/src/uts/m68k/sysgen/sysgen -l /usr/src/uts/m68k/sysgen -big
  make -f io.mk MAKE=make FRC= DASHG= DASHO=-O INCRT=/usr/include
LIBDIR=./cf SYS= CFLAGS=-O -I/usr/include -DLAI -DINKERNE
L -DSTREAMS -DBRIDGE CPU=m68k CC=/bin/pcc/cc
  make -f scsi.mk "MAKE=make" "CC=/bin/pcc/cc" "FRC=" "INCRT=/usr/include"
"DASHO=-O" "CFLAGS=-O -I/usr/include -DLAI -DINKER
.
.
.
Warning: ./config.h: 358: NBLK4 redefined
rm -f sysV68 sysV68.nm
ld -o sysV68 ld.VME131 m68kvec.o low.o conf.o lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tc
pip lib.nfs lib.bppv2 lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scsi
lib.wan lib.x25 lib.stub lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tc pip lib.nfs lib.bppv2
lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scs
i lib.wan lib.x25 lib.stub
mcs -da "SYSTEM V/68 - R3V7" sysV68
chmod 755 sysV68
../kdb/kdbnm -q sysV68
../kdb/kdbnm: not enough space for symbol table
../kdb/kdbnm: need total of 145908 bytes at k_syntab
../kdb/kdbnm: 135168 bytes were reserved for symbols, 135168 bytes were used
sysV68 made.
```

### Procedure 3: Load application software from tape (continued)

**Figure 134**  
**Module name prompt**

```
ADD MODULE NAME AND ADDRESS TO TCPIP TRANSPORT PROVIDER DATABASE

If you are not sure how to answer any prompt, type "?" for HELP.

Your module's system is currently the default name. We recommend that you change
it to avoid possible name conflicts.

Enter the MODULE NAME to be added to the tcpip transport provider database
(?, or module name):
```

- 16** You are prompted for the name of the Application Module or IPE Module (Figure 134). (The term “module name” refers to an Ethernet host computer, which in this case is the Application Module or IPE Module.) Type the module name and press [Return]. The module name must not exceed eight alphanumeric characters. For more information about module names, consult your network administrator.

**Figure 135**  
**Module address prompt**

```
Enter the MODULE ADDRESS to be added to the tcpip transport provider database
(?, or module address):
```

- 17** You are prompted for the address of the Application Module or IPE Module (Figure 135). Type the module address and press [Return]. The module address must be four numbers separated by periods, such as “12.234.67.89”. For more information about module addresses, consult your network administrator.

**Figure 136**  
**Reenter prompt**

```
If you made any mistakes in entering the module name and IP address, you can
correct them. Would you like to re-enter the module name or IP address? [y,n]:
```

### Procedure 3: Load application software from tape (continued)

- 18** You are asked whether you want to reenter the module name or address (Figure 136).

If you have not made a mistake, type **n** and press [Return]. Go to step 19.

If you want to reenter the module name and address, type **y** and press [Return]; you will return to step 16.

#### Figure 137 Reboot prompt

```
Entry for <module name> with address <address> added to tcpip transport provider
database.

Now your system has been modified. You must reboot the system to have the new
kernel take effect.

Would you like to reboot the system now (y/n) ?
```

- 19** You are prompted to reboot the system (Figure 137). Type **y** and press [Return].

#### Figure 138 Reboot messages 1

```
INIT: New run level: 6
The system is coming down. Please wait.
System services are now being stopped.
Terminating Applications
/usr/bin/maint: /dev/tty: cannot create
cron aborted: SIGTERM

The system is down.

NOTICE: System Reboot Requested (0)
```

The system clears and the following messages appear:

### Procedure 3: Load application software from tape (continued)

**Figure 139**  
**Reboot messages 2**

```
Copyright Motorola Inc. 1988 - 1992, All Rights Reserved
M4120 Debugger/Diagnostics Release Version 1.1 - 09/30/92 (IR01)
COLD Start

Local Memory Found =01000000 (&1677216)
MPU Clock Speed =25Mhz

Autoboot in progress... To abort hit <BREAK>
Booting from: M4120, Controller 0, Drive 0
Loading: Operating System

.                                     (diagnostic messages)
.
Initializing For Applications
    Configure Link 0 : successful
    Configure Link 1 : successful
    Configure Link 2 : successful
    Enable Link 0 : successful
    Enable Link 1 : successful
    Enable Link 2 : successful
    Application release successful
Starting Applications
06/01/94 20:55:53 Starting CCR Application...
Starting Customer Controlled Routing Processes...

Performing modem reset...
Connected
Sending atz
to the device.
Done modem reset.
The system is ready.

Console Login:
```

- 20** Remove the application tape from the cassette tape drive.

The appearance of the “Console Login:” prompt indicates that the new package is now installed. You may now log in to the system to perform other commands. You may also restore configuration files and data files from backup if necessary (Procedure 8: Restore configuration files and data files from the backup tape).

## Procedure 4: Power down the IPE Module or the Application Module

- 1 At the “Console Login:” prompt, type **maint** and press [Return].
- 2 At the “password” prompt, type **maint** and press [Return].
- 3 At the “maint” prompt, type **powerdown** and press [Return].

**Figure 140**  
**Powerdown notification message screen 1**

```
maint> powerdown

Would you like to power down or reboot?
Powering down allows you to turn the system off.
Rebooting will automatically restart the system.
Enter p to power down, r to reboot, or q to quit:
```

- 4 When prompted to power down, reboot, or quit, type **p**, and press [Return] to confirm that you wish to power down.

The information shown in Figure 141 appears on the screen.

**Figure 141**  
**Powerdown notification message screen 2**

```
Running subcommand /powerdown/ from menu /machinemgmt/
MACHINE MANAGEMENT
```

**Note:** If more than one user is logged into the system, a list of the logged in users will appear on the screen.

```
Users currently logged in:
disttech console Oct 7 16:48
disttech ttya0 Oct 4 17:10 (telesrvr)
Once started, a powerdown CANNOT BE STOPPED.
Do you want to start an express powerdown? [y, n, ?, q]
```

**Procedure 4: Power down the IPE Module or the Application Module  
(continued)**

- 5 If software users are logged in, a list appears. Whether a list appears or not, you are prompted to start an express powerdown. If no list appears, or if you do not wish to alert all logged-in users, type **y** and press [Return].

If you wish to alert all users currently logged into the system of the powerdown, type **n** and press [Return]. If you do, you are prompted to enter the number of seconds the system should wait after the warning message. Type the number of seconds that will allow the users to save their work and log off. Then press [Return].

The information shown in Figure 142 appears on the screen.

**Figure 142**  
**Shutdown message screen**

```
Shutdown started.
Broadcast Message from root (console) on sysv68
THE SYSTEM IS BEING SHUTDOWN NOW! ! !
Log off now or risk you files being damaged.

INIT: New run level: 0
The system is coming down. Please wait.
System services are now being stopped.
Terminating applications

Releasing Communication Resources...
The system is down.
NOTICE: System Halt Requested (0)
NOTICE: System secured for powering down.
```

- 6 When the system confirms that it is secured for powering down, set the Application Module circuit breaker to OFF or press the power pushbutton on the IPE Module.
- 7 If your system uses an Application Module with an MVME147 card, go to Procedure 5.

If your system uses an IPE Module or an Application Module with an MVME167 card, go to Procedure 6.

## Procedure 5: Load the operating system tape on an Application Module with an MVME147 card

This procedure assumes that you have backed up all files and have powered down the Application Module (Procedure 4).

### ATTENTION

Do not press the [Backspace] or [Delete] key when the operating system is not installed, or you may drop out of the procedure into a previous menu or out of the installation procedure altogether. Use # (hold the [Shift] key and press 3) to backspace.

If you drop out of the procedure (into the “#” prompt), start the reinstallation procedure from the beginning.

**Note:** If you intend to activate CCR and use terminals or printers, ensure that the MVME332XT or MVME332XTS card is installed before you start this procedure.

If you are sure that your MVME147 card has been configured (for example, if you are upgrading software on a working system), skip steps 3–13 and go directly from step 2 to step 14.

- 1 Set the appropriate breaker on the MPDU to the ON position.  
The following messages appear.

**Figure 143**  
**System restart messages (MVME147 card)**

```
Copyright Motorola Inc. 1989,1990,1991, All Rights Reserved
VME147 Monitor/Debugger Release 2.42 - 8/1/91
CPU running at 25 MHz

FPC passed test
MMU passed test

COLD Start

Onboard RAM start = $00000000, stop = $007FFFFF
No offboard RAM detected
```

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

- 2 Type **h** immediately, before the next prompt appears. (You have about five seconds to do this.)
- 3 Write down the firmware release listed on the second message line. Figure 143, for example, shows Release 2.42. You will need this in step 12.

**Figure 144**  
**Start-up interrupt menu**

```
1) Continue System Start-up
2) Select Alternate Boot Device
3) Go To System Debugger
4) Initiate Service Call
5) Display System Test Errors
6) Dump Memory to Tape
Enter Menu #:
```

- 4 The menu in Figure 144 appears. Type **3** and press [Return] to enter the system debugger.
- 5 At the “147-Diag>” prompt, type **iot;t** and press [Return].  
The system performs a scan of disk/tape controllers (Figure 145).

**Figure 145**  
**Results of disk/tape controller scan**

```
Scanning system for available disk/tape controllers.....
Disk Controllers Available
LUN  Type      Address  # dev
0    VME147  $FFFE4000  1  SCSI Addr = 0 - FUJITSU M2614S      M606
1    VME147  $FFFE4000  1  SCSI Addr = 4 - TEAC  MT-2ST/N50  RV F
      VME147  $FFFE4000  *  SCSI Addr = 7
Align LUNs to SCSI addresses [Y,N] N?
```

- 6 Write down the type of disk drive installed in SCSI address 0. This information is required later in the procedure. (In the example shown above, the drive is a Fujitsu M2614S.)
- 7 You are prompted to align LUNs. Type **y** and press [Return].



### Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)

**Figure 146**  
Disk/tape controller list after aligning LUNs

```

Disk Controllers Available
LUN  Type      Address  # dev
0    VME147    $FFFE4000  1 SCSI Addr = 0 - FUJITSU M2614S M606
1    VME147    $FFFE4000  1 SCSI Addr = 1
2    VME147    $FFFE4000  1 SCSI Addr = 2
3    VME147    $FFFE4000  1 SCSI Addr = 3
4    VME147    $FFFE4000  1 SCSI Addr = 4 - TEAC MT-2ST/N50 RV F
5    VME147    $FFFE4000  1 SCSI Addr = 5
6    VME147    $FFFE4000  1 SCSI Addr = 6
    VME147    $FFFE4000  * SCSI Addr = 7

Save map in NVRAM [Y,N] N?

```

- 8 The LUN results appear (Figure 146). Type **y** and press [Return] to save the map in non-volatile memory.
- 9 The 147-Diag> prompt reappears. Type **ab** and press [Return] to set autoboot enable.  
Autoboot enable prompts appear. Answer them as indicated below.

**Figure 147**  
Autoboot enable prompts

```

Controller LUN = 00? <Cr>
Device LUN = 00? <Cr>
Default String = ? <Cr>
Boot at Power-up only or any board Reset [P,R] = R? <Cr>
On any board Reset:
Auto Boot from Controller 0, Device 0

```

- 10 At the “147-Diag>” prompt, type **reset** and press [Return].  
The SCSI bus reset prompts appear. Answer them as indicated in the following figure.

### Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)

**Figure 148**  
SCSI bus reset prompts

```
Reset Local SCSI Bus (Y, N) N? y <Cr>
Automatic reset of known SCSI Buses on RESET (Y, N) = Y? <Cr>
Cold/Warm Reset flag (C, W) = C? <Cr>
Execute Soft Reset (Y, N) N? <Cr>
```

- 11 When the "147-Diag>" prompt appears, type **env** and press [Return].  
The environment prompts appear.
- 12 Answer the prompts as indicated in Figures 149, 150, or 151, depending on the firmware installed in your system. The firmware release appeared in the start-up messages shown in step 3.

**Figure 149**  
Environment prompts for firmware revision 2.2

```
Bug or System environment [B,S] = S? <Cr>
SYSTEM V/68 or VERSAdos operating system [S,V] = S? <Cr>
Execute/Bypass SST Memory test [E,B] = E? b <Cr>
Set VME Chip:
Board ID [0-FF] = $00? <Cr>
GCSR base address [0-0F] = $0F? <Cr>
Utility Interrupt Mask [0-FE] = $00? <Cr>
Utility Interrupt Vector [$20-$30] = $0180? <Cr>
```

**Figure 150**  
Environment prompts for firmware revision 2.3

```
Bug or System environment [B,S] = S? <Cr>
Execute/Bypass System Memory Sizing [E,B] = B? <Cr>
Execute/Bypass SST Memory test [E,B] = B? <Cr>
Set VME Chip:
Board ID(def is 0) [0-FF] = $00? <Cr>
GCSR base address offset(def is 0F) [0-0F] = $0F? <Cr>
Utility Interrupt Mask(def is 0) [0-FE] = $00? <Cr>
Utility Interrupt Vector number(def is 60) [8-F8] = $60? <Cr>
VMEbus Interrupt Mask(def is FE) [0-FE] = $FE? <Cr>
```

### Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)

**Figure 151**  
Environment prompts for firmware revision 2.42

```

Bug or System environment [B,S] = S? <Cr>
Execute/Bypass System Memory Sizing [E,B] = B? <Cr>
Execute/Bypass SST Memory test [E,B] = B? <Cr>
Set VME Chip:
Board ID(def is 0) [0-FF] = $00? <Cr>
GCSR base address offset(def is 0F) [0-0F] = $0F? <Cr>
Utility Interrupt Mask(def is 0) [0-FE] = $00? <Cr>
Utility Interrupt Vector number(def is 60) [8-F8] = $60? <Cr>
VMEbus Interrupt Mask(def is FE) [0-FE] = $FE? <Cr>
VMEbus Requester Level (def is 0) [0-3] = 00? <Cr>
VMEbus Requester Release (def is ROR) [ROR, RWD, NVR] = ROR? <Cr>

```

Depending on the previous configuration, the system will reboot automatically or display the “147-Diag>” prompt.

- 13** If the system reboots automatically at this point, type **h** as soon as messages begin to appear on the console.

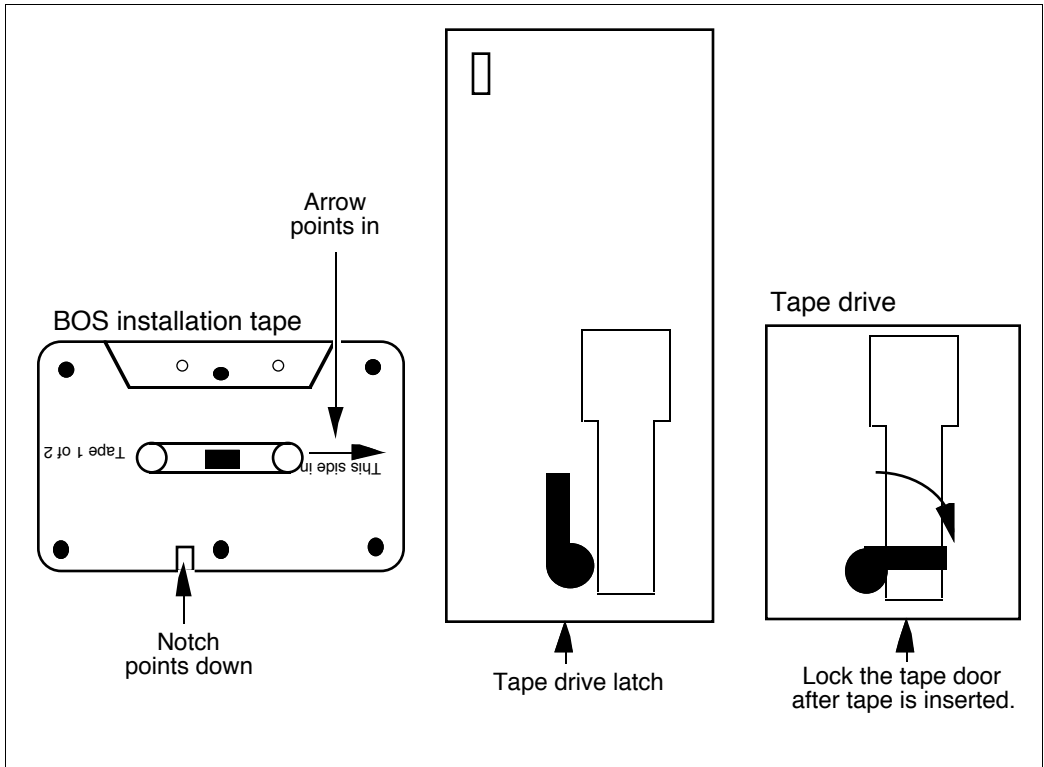
If the system displays the “147-Diag>” prompt, type **menu** then press [Return].

In either case, the start-up interrupt menu appears.

- 14** Insert the BOS tape System V/68 BOS R3V7.1 into the tape drive.  
The tape indicator light comes on, flashes, and then goes off. Wait for the tape indicator light to turn off before proceeding to the next step.

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

**Figure 152**  
**Insert tape into the tape drive**



**Figure 153**  
**Start-up interrupt menu**

- 1) Continue System Start-up
  - 2) Select Alternate Boot Device
  - 3) Go To System Debugger
  - 4) Initiate Service Call
  - 5) Display System Test Errors
  - 6) Dump Memory to Tape
- Enter Menu #:

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

- 15 When the tape indicator goes off, type **2** and press [Return].
- 16 You are prompted to enter the alternate boot device. Type **4**, and press [Return].
- 17 When the start-up interrupt menu reappears, type **1** and press [Return] to continue the system start-up.

The system starts up. A series of test messages will appear on one line across the screen for approximately ten minutes. The system start-up messages begin to appear as shown in the following figure.

**Figure 154**  
**System start-up messages**

```

Testing Complete
Autoboot in progress ... To abort hit <BREAK>

RAM address from VMEbus = $00000000

Booting from: VME147, Controller 4, Device 0
Loading: Operating System

Volume: V/68

IPL loaded at: $001F0000
MVMETAPE IPL Version 1.0

*****

                System V/68 Release R3V7 M68030 Version 920526

                        Real mem = 6291456
                        Avail mem = 4964352
                        Buffers   = 60

*****
Copyright (c) 1984-1992 Motorola Inc. All rights reserved

INIT: SINGLE USER MODE
***
erase = # kill = @ intr = DEL quit = ^|
***
147 SCSI configuration
Device  Addr Vers Revision  Serial  Blocks  Size Vendor Description
-----  -
Disk    00 0001 M606...  .....  0352175  0512 FUJITSU  M2614S
Tape    40 0001 RV F...  .....  0000000  0000 TEAC    MT-2ST/N50
Enter the correct date and time EST using one of the following formats
[mmddhhmmyy] or [mmddhhmmyyy]:

```

- 18 Type the date in the form MMDDHHMYY (month, date, hour in 24-hour clock format, minute, year—note that the time should be in Eastern Standard Time), or MMDDHHMYYYY, and press [Return].

Example: **0314163098** or **031416301998**

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

**ATTENTION**

During the installation or start-up of BOS, different characters than usual represent the character delete, line delete, and interrupt functions. During these operations,

- character delete (backspace), usually [Control-h], is [#]
- line delete, usually [Control-u], is [@]
- interrupt, usually [Control-c], is Delete

If you make a mistake entering the date, use [#] to delete characters. If you press [Delete], a “#” prompt appears; press [Control-d] to return to where you were.

- 19** You are prompted to confirm the date you entered. Type **y** and press [Return] if the date is correct.

If the date is not correct, type **n** and press [Return]. You are then prompted to enter each value.

When you enter the date successfully and respond **y** to the prompt, the BOS software management menu appears.

**Figure 155**  
**BOS software management menu**

```
The BOS (FE03.71) Software Management Menu
1 install      Install FE03.71 BOS Software
2 upgrade      Upgrade To FE03.71 BOS Software

----> Enter a number, a name, the initial part of name, or
? or <number>? for HELP, q to QUIT:
```

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

**20** Type **1** and press [Return] to install the software.

The BOS installation procedure begins.

**Figure 156**  
**BOS installation, phase 1**

```
BOS INSTALLATION PROCEDURE

Phase 1.  Identify Root And Usr File Systems Installation Disk Drive(s)

The BOS product supports root and usr file system installations
on the disk controllers listed below.  The first column is the controller's
selection number, the second column is the name of the controller, and,
the third column is a brief description of the controller.  Identify
at the prompt the root file system's installation disk controller type.

  1  MVME147  The MVME147 CPU Processor/SCSI Controller
  2  MVME167  The MVME167 CPU Processor/SCSI Controller
  3  MVME323  The MVME323 ESDI Disk Controller
  4  MVME327  The MVME327 SCSI Bus Controller
  5  MVME328  The MVME328 SCSI Host Adapter

---> Enter a number, a name, the initial part of a name, or
      ? or <number>? for HELP, or q to QUIT [MVME167]:
```

**21** When prompted to select the SBC card, type **1** and press [Return].

The system response is “Selected the ‘MVME147’ controller type.”

**Figure 157**  
**Disk drive number prompt**

```
---> Enter the root file system's disk drive number
      (00, 10, 20, 30, ?, q) [00]:
```

**22** You are prompted to enter the root file system's disk drive number. Press [Return] to select the default disk drive number (00).

The disk drive selection list appears.

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

**Figure 158**  
**Disk drive selection list**

```

The MVME147 CPU Processor/SCSI Controller may be used to install
the BOS product on the following disk drive types.
The first column is the selection number, the second is the disk type
name (see the disk types associated with the ddefs(1M) utility), and
the third briefly describes the specific disk drive type:

  1 m147cdcIV      Seagate/CDC WREN IV 300Mb Disk (94171/MVME875)
  2 m147cdcIII    Seagate/CDC WREN III 150Mb Disk (94161/MVME874)
  3 m147sea80     Seagate ST-296N 80Mb Disk (ST296N/M MVME873)
  4 m147cdcV     Seagate/CDC WREN V 600Mb Disk (94181/MVME876)
  5 m147cdcVII    Seagate/CDC WREN VII 1.2 GB Disk (94601/MVME877)
  6 m147swift126 Seagate/CDC Swift 104 MB Disk (94351-126/MVME863)
  7 m147swift201 Seagate/CDC Swift 172 MB Disk (94351-200S/MVME864)
  8 m147fuji2613 Fujitsu Pico Bird 3E 135Mb Disk (2613ESA/MVME863)
  9 m147fuji2614 Fujitsu Pico Bird 3E 180Mb Disk (2614ESA/MVME864)
 10 m147fuji2624 Fujitsu Pico Bird 4 500Mb Disk (2624SA/MVME866)
 11 m147fuji2622 Fujitsu Pico Bird 4 300Mb Disk (2622SA/MVME865)
 12 m147fuji2652 Fujitsu Super Humming Bird 1.75 Gb Disk (2652SA/MVME878)
 13 m147fuji2694 Fujitsu Pico Bird 5 1 Gb Disk (2694SA/MVME867)
 14 m147micr1578 MICROPOLIS 300Mb Disk (1578)
 15 m147micr1588 MICROPOLIS 600Mb Disk (1588)
 16 m147micr1598 MICROPOLIS 1Gb Disk (1598)
 17 m147sea3283  Seagate 240 Megabyte Disk (ST3283N)

---> Enter a number, a name, the initial part of a name, or
      ? or <number>? for HELP, or q to QUIT [m147cdcIV]:
    
```

You noted the disk type for your system in step 6. (See Figure 145 for an example.) Most of the disk drives shown in the above figure are not used by Nortel. Some common disk types used by Nortel and their corresponding selection numbers are listed in the table below.

**Note:** If your drive is not listed, but another drive of the same size is listed, use the option number for the listed drive. If you experience difficulties, contact your Nortel support personnel.

Disk types used	Select this number
CDC ST1126N 9204 (104 Mbyte)	6
CDC ST1201N (172 Mbyte)	7
Fujitsu M2614S (180 Mbyte)	9
Seagate ST3283N (240 Mbyte)	17



**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

- 23 Type the number corresponding to your disk drive, and press [Return].

The system response is "Selected the XXXX disk type," where XXXX represents the disk type selected.

**Figure 159  
Format disk drive prompt**

```
If the root file system's disk is new or needs to be formatted,
it can be formatted now. In order for you to take advantage of
dynamic disk slicing capabilities and the use of the
sledit(1M) utility you may have to reformat the disk if it
was formatted with the R3V3 or earlier version of
the BOS disk formatter, dinit(1M).
```

```
WARNING - FORMATTING THE DISK WILL DESTROY ALL DATA ON THE DISK.
```

```
---> Format the root file system's disk drive (y, n, ?, q) [n]:
```

- 24 You are prompted to format the root file system's disk drive. Type **y** and press [Return] to indicate that you wish to format the drive.

**Figure 160  
Same disk drive prompt**

```
The usr file system is often on the same disk drive as
the root file system, but not always. The following
questions determine where to install the usr file system.
```

```
---> Will the root and usr file systems be
on the same disk drive? (y, n, ?, q) [y]:
```

- 25 You are prompted to indicate whether or not the root and user file systems will be on the same disk drive. Type **y** and press [Return] to indicate yes.

**Figure 161  
Slice number prompt**

```
The default usr file system slice number for the MVME147
controller is slice number 2, but it may be changed.
Enter below, the slice number where the usr file system is to be installed.
```

```
---> Enter the slice number for the usr file system (0-6, ?, q) [2]:
```

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

- 26 You are prompted to enter the user file system slice number. Press [Return] to use the default slice number (2).

Phase 2 of the BOS installation begins, and the slice table appears. Figures 162–165 show disk-slicing tables for four different drive types.

**Figure 162**  
**Disk-slicing table for 104-Mbyte disk drive**

```
Phase 2.  Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size  fs size  fsname  vol-id  info
0      648     40000   40000   root    R3      1
1      40648   20000   0        root    R3      1h8
2      60648   148484  148484  usr     R3      1
3      0        0       0        root    R3      1h8
4      0        0       0        root    R3      1h8
5      0        0       0        root    R3      1h8
6      0        0       0        root    R3      1h8
7      0        209132  0        root    R3      1h8

---> Modify any of these parameters? (y, n, ?, q): [n]
```

**Figure 163**  
**Disk-slicing table for 172-Mbyte disk drive**

```
Phase 2.  Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size  fs size  fsname  vol-id  K
0      648     60000   60000   root    R3      1
1      60648   40000   0        root    R3      1
2      100648  180000  180000  usr     R3      1
3      280648  54827   0        root    R3      1
4      0        0       0        root    R3      1
5      0        0       0        root    R3      1
6      0        0       0        root    R3      1
7      0        335475  0        root    R3      1

---> Modify any of these parameters? (y, n, ?, q): [n]
```

### Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)

**Figure 164**  
Disk-slicing table for 180-Mbyte disk drive

slice	offset	sl size	fs size	fsname	vol-id	info
0	648	60000	60000	root	R3	1
1	60648	40000	0			1h8
2	100648	180000	180000	usr	R3	1
3	280648	71528	0			1h8
4	0	0	0			1h8
5	0	0	0			1h8
6	0	0	0			1h8
7	0	352176	0			1h8

---> Modify any of these parameters? (y, n, ?, q): [n]

**Figure 165**  
Disk-slicing table for 240-Mbyte disk drive

slice	offset	sl size	fs size	fsname	vol-id	info
0	648	60000	60000	root	R3	1
1	60648	40000	0			1h8
2	100648	378000	378000	usr	R3	1
3	478648	142	0			1h8
4	0	0	0			1h8
5	0	0	0			1h8
6	0	0	0			1h8
7	0	478800	0			1h8

---> Modify any of these parameters? (y, n, ?, q): [n]

- 27** You are prompted to modify the parameters. Type **n** and press [Return] to indicate that you don't wish to modify any parameters.

**Figure 166**  
Install OLMP prompt

---> Install On-line Manual Pages Object Package (OLMP)? (y, n, ?, q) [n]:

- 28** You are prompted to indicate whether you wish to install online manual pages. Type **y** and press [Return] to indicate yes.

**Figure 167**  
Install TARS prompt

---> Install On-line Problem Descriptions (Tars on Tape)? (y, n, ?, q) [n]:

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

- 29 You are prompted to indicate whether you wish to install online problem descriptions. Nortel does not use these descriptions. Type **n** and press [Return] to indicate no.

**Figure 168**  
**Verify installation prompt**

```
----> Do you want to verify correct installation? (y, n, q) [y]:
```

- 30 You are prompted to verify correct installation. Press [Return] to indicate yes.

Confirmation of your selection appears, along with a summary of the installation information. The summary should look exactly as in Figure 169, with the possible exception of the disk drive entry ('m147fuj2614').

**Figure 169**  
**Software installation summary**

```
Selected to run mkcomply to verify correct installation.

Check the information below. If any part of the information is incorrect,
the previous questions will have to be answered again.

* Format and install the new bootloader on the MVME147,
  controller #0, disk drive #00,
  using the ddefs(1M) description 'm147fuj2614'.
* Create a root file system using 1 Kbyte logical blocks
  on slice 0 on the MVME147, controller #0, disk drive #00.
* Create a swap area in slice 1 on the
  MVME147, controller #0, disk drive #00.
* Create a usr file system using 1 Kbyte logical blocks
  on slice 2 on the MVME147, controller #0, disk drive #00.
* Install On-line Manual Pages Object Package (OLMP).
* Do Not Install On-line Problem Descriptions (Tars on Tape)
----> Is all of this information correct (y, n, q, ?):
```

- 31 If the summary information is correct, type **y** and press [Return]. If it is not correct, type **n**, press [Return], and then enter the information correctly when prompted.

When the information is correct and you reply **y** to the above prompt, phases 3 and 4 of the installation begin.

### Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)

**Note:** Phases 3 and 4 may take from 30 to 90 minutes to complete.

**Figure 170**  
BOS installation, phases 3 and 4

```

***> Checking tape in drive

Phase 3. Prepare Installation Disk Drive(s)

***> Retensioning tape (in background)
***> Formatting root file system's disk drive
***> Writing slice table to /dev/rdisk/m147_00s7
***> Creating the root file system
***> Labeling the root file system
***> Creating the usr file system
***> Labeling the usr file system
***> Installing boot-loader on root file system's disk drive
***> Mounting root file system as /root
***> Making the /tmp directory
***> Making the /usr directory
***> Mounting usr file system as /root/usr

Phase 4. Install BOS Software

***> Waiting for tape to complete retensioning
***> Copying files; this will take from 10-35 minutes
    depending upon your system configuration...
70240 blocks
1200 blocks
10960 blocks
40 blocks
***> Making the root file system lost+found directory

Reserving 160 entries
***> Making the usr file system lost+found directory

Reserving 480 entries
***> Installing /etc/badtracks/m147_00 bad spot list
***> Creating sysadm(IM) package information file
***> Setting up the new operating system
***> Creating root and usr file system associated device nodes
***> Setting permissions on installation disk's root directory
***> Running mkcomply to confirm correct installation
***> Setting root's password entry
New password:

```

- 32** At the “New Password:” prompt, press [Return].  
The system responds with “Re-enter new password:.”
- 33** Press [Return] again.

**Procedure 5: Load the operating system tape on an Application Module with an MVME147 card (continued)**

**Figure 171**  
**BOS installation, completion**

```
Re-enter new password:
***> Unmounting all mounted file systems
***> Synchronizing the installation disk

          BOS product installation is completed.

You must RESET the system and allow it to autoboot from the hard disk
.

          *****
          **** RESET THE SYSTEM ****
          *****
```

**34** Remove the BOS tape from the drive.

**Note:** Procedure 6 is for the IPE Module or MVME167 card.

**35** Proceed with Procedure 7 and go through the setup.

## Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card

If you have just installed a new MVME167 card in an Application Module and you are installing the software for the first time, you need to do steps 2–6. Otherwise, skip these five steps.

**Note:** If you intend to activate CCR and use terminals or printers, ensure that the MVME332XT or MVME332XTS card is installed before you start this procedure.

This procedure assumes that you have backed up all files and have powered down the IPE Module or the Application Module (Procedure 4).

- 1 Turn on the power. If the “167-Diag>” or the “167-Bug>” prompt appears, go to step 5. If the “4120-Diag>” or the “4120-Bug>” prompt appears, go to step 4. If the following messages appear on the console, go to step 2.

**Figure 172**  
**System restart messages (IPE Module or MVME167 card)**

```
Copyright Motorola Inc. 1988 - 1992, All Rights Reserved
VME167 Debugger/Diagnostics Release Version 1.4 - 07/22/92
COLD Start
Local Memory Found = 00800000 (&8388608)
MPU Clock Speed = 25Mhz
```

- 2 Type **h** as soon as messages start to appear. If you are too late, press either the [F5] or the [Break] key.  
The start-up interrupt menu appears.
- 3 If you are using an IPE Module, go to step 4.  
If you are using a new MVME167 card, go to step 5.  
If you are using a previously configured MVME167 card, go to step 7.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

- 4 At the “4120-Diag>” or “4120-Bug>” prompt, type **env** and press [Return].

The environment prompts appear. Answer them as indicated in the following figure. Then go to step 6.

**Figure 173**  
**Environment prompts (IPE Module)**

```
Bug or System environment [B/S] = B? <cr>
Field Service Menu Enable [Y/N] = N? <cr>
Probe System for Supported I/O Controllers [Y/N] = Y? <cr>
Local SCSI Bus Reset on Debugger Startup [Y/N] = Y? <cr>
Ignore CFGA Block on a Hard Disk Boot [Y/N] = Y? <cr>
Auto Boot Enable [Y/N] = Y? <cr>
Auto Boot at power-up only [Y/N] = N? <cr>
Auto Boot Controller LUN = 00? . <cr> (Type a period and press
[Return].)
```

If you make a mistake, quit the process by entering a period (.) at a prompt and answering **n** for the last two questions (Update Non-Volatile RAM/Reset Local System). This brings you back to the “167-Diag>” or “4120-Diag>” prompt. Then type **env;d** and press [Return] to undo the mistakes you made and bring back the original default values.

**Note:** At the “Auto Boot Controller LUN=00?” prompt, type a period and press [Return] to bypass additional prompts that do not need to be changed.



**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Note:** If you changed or reentered any values in Figure 173, you will see two additional prompts, to which you should respond as shown in the following figure.

**Figure 174**  
**Additional prompts (IPE Module)**

```
Update Non-Volatile RAM (Y/N)? y <cr>
Reset Local System (CPU) (Y/N)? y <cr>
```

- 5 At the “167-Diag>” prompt, type **env** and press [Return].

The environment prompts appear. Answer them as indicated in the following figures. Then go to step 6.

If you make a mistake, quit the process by entering a period (.) at a prompt and answering **n** for the last two questions (Update Non-Volatile RAM/Reset Local System). This brings you back to the “167-Diag>” prompt. Then type **env;d** and press [Return] to undo the mistakes you made and bring back the original default values.

**Note:** At the “Auto Boot Controller LUN=00?” prompt, type a period and press [Return] to bypass additional prompts that do not need to be changed.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 175**  
**Environment prompts (MVME167 card)**

```
Bug or System environment [B/S] = S? <cr>
Field Service Menu Enable [Y/N] = Y? <cr>
Remote Start Method Switch [G/M/B/N] = B? <cr>
Probe System for Supported I/O Controllers [Y/N] = Y? <cr>
Negate VMEbus SYSFAIL* Always [Y/N] = N? <cr>
Local SCSI Bus Reset on Debugger Start-up [Y/N] = Y? <cr>
Local SCSI Bus Negotiations Type [A/S/N] = A? <cr>
```

*Note:* The prompt “Local SCSI Bus Negotiations Type” may not appear for all MVME167 cards.

```
Ignore CFGA Block on a Hard Disk Boot [Y/N] = Y? <cr>
Auto Boot Enable [Y/N] = Y? <cr>
Auto Boot at power-up only [Y/N] = N? <cr>
Auto Boot Controller LUN = 00? . <cr> (Type a period and press [Return].)
```

**Note:** If you changed or reentered any values in Figure 175, you will see two additional prompts, to which you should respond as shown in the following figure.

**Figure 176**  
**Additional prompts (MVME167 card)**

```
Update Non-Volatile RAM (Y/N)? y <cr>
Reset Local System (CPU) (Y/N)? y <cr>
```

- 6 The system reboots automatically. Messages start to appear on the console. Type **h** as soon as messages start appearing on the console.  
The start-up interrupt menu appears.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Note:** If the “167-Diag>”, “4120-Diag>” or “4120-Bug>” prompt appears, type **menu** and press [Return].

**Figure 177**  
**Start-up interrupt menu**

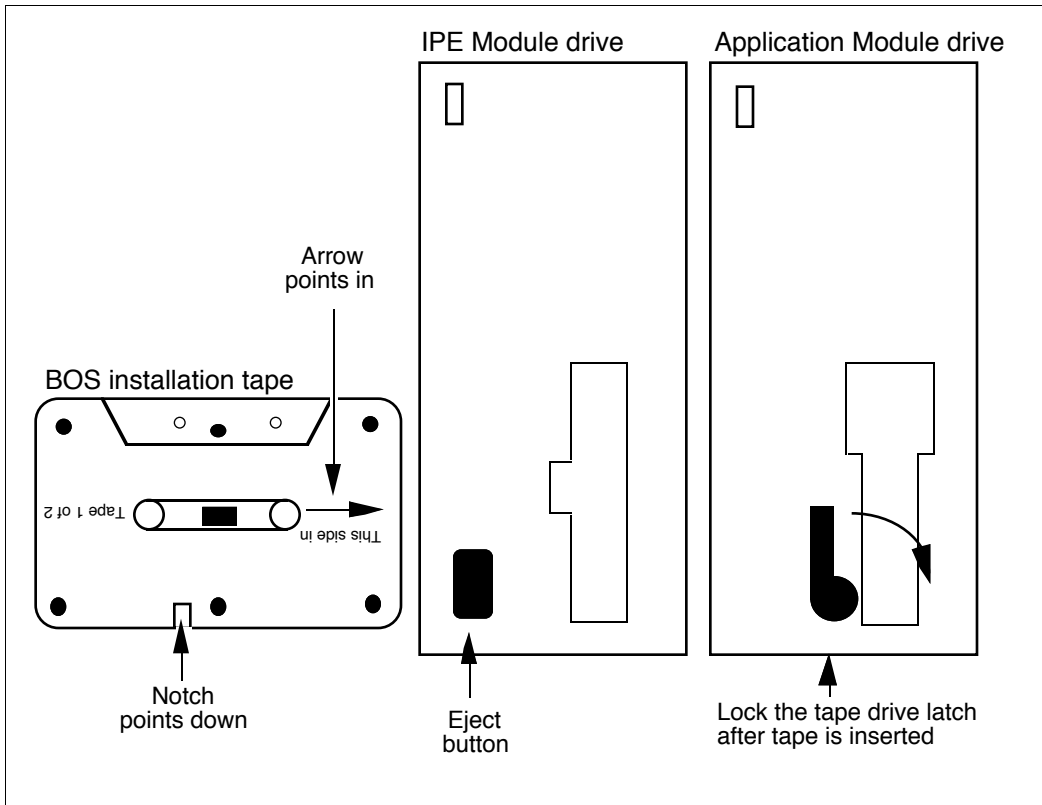
```
1) Continue System Startup
2) Select Alternate Boot Device
3) Go to System Debugger
4) Initiate Service Call
5) Display System Test Errors
6) Dump Memory to Tape
Enter Menu #:
```

- 7** Insert the base operating system tape (tape 1 of 2, System V/68 BOS R3V7.1) into the tape drive.

The tape indicator light comes on, flashes, and then goes off. Wait for the tape indicator light to turn off before proceeding to the next step.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 178**  
**Insert tape into the tape drive**



**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

8 Type **2** and press [Return].

**Figure 179**  
**Alternate boot device prompt**

```
Alternate Boot Device (Controller,Drive,File): 0,0,  
Change it (Y/N)?
```

9 You are prompted to change the alternate boot device. Type **y** and press [Return].

**Figure 180**  
**Controller prompt**

```
Enter Alternate Boot Device:  
Controller:
```

10 You are prompted to enter the controller number. Type **0** and press [Return].

**Figure 181**  
**Drive prompt**

```
Drive :
```

11 You are prompted to enter the drive number. Type **40** and press [Return].

**Figure 182**  
**File prompt**

```
File :
```

12 You are prompted to enter the file name. Press [Return].

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 183**  
**Continue start-up prompt**

```
Continue System Start Up (Y/N)?
```

**13** You are prompted to continue start-up. Type **y** and press [Return].

**Note:** It is normal for the Fail indicator on the SBC card to flash while diagnostics are being run (after power-on or during rebooting).

A series of test messages will appear on one line across the screen for approximately ten minutes. The system start-up messages begin to appear as shown in the following figure.

**Figure 184**  
**System start-up messages**

```
Testing Complete
Autoboot in progress ... To abort hit <BREAK>

Booting from: VME167, Controller 0, Drive 40
Loading: Operating System

Volume: V/68

IPL loaded at: $001F0000
MVMTAPE IPL Version 1.0

*****
                System V/68 Release R3V7 M68040 Version 920526

                        Real mem = 6291456
                        Avail mem = 4956160
                        Buffers   = 60

*****
Copyright (c) 1984-1992 Motorola Inc. All rights reserved

INIT: SINGLE USER MODE
***
erase = # kill = @ intr = DEL quit = ^|
***
167 SCSI configuration
Device  Addr Vers Revision  Serial#  Blocks  Size Vendor Description
-----  -
Disk    00 0002 9324...  ....  0478845 0512 SEAGATE ST3283N
Tape    40 0001 RV F...  ....  0000000 0000 TEAC MT-2ST/N50
Enter the correct date and time EST using one of the following formats
[mmddhhmmyy] or [mmddhhmmyyyy]:
```

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

- 14 Write down the vendor and description of the disk drive installed in SCSI address 00. This information is required later in the procedure. (In the example shown above, the drive is a SEAGATE ST3283N.)
- 15 Type the date in the form MMDDHHMMYY (month, date, hour in 24-hour clock format, minute, year—note that the time should be Eastern Standard Time), or MMDDHHMMYYYY, and press [Return].

Example: **0314163098** or **031416301998**

**ATTENTION**

During the installation or start-up of BOS, different characters than usual represent the character delete, line delete, and interrupt functions. During these operations,

- character delete (backspace), usually [Control-h], is [#]
- line delete, usually [Control-u], is [@]
- interrupt, usually [Control-c], is Delete

If you make a mistake entering the date, use [#] to delete characters. If you press [Delete], a “#” prompt appears; press [Control-d] to return to where you were.

- 16 You are prompted to confirm the date you entered. Type **y** and press [Return].

If the date is not correct, type **n** and press [Return]. You are then prompted to enter the date, as in step 15.

When you enter the date successfully and respond **y** to the prompt, the BOS software management menu appears (Figure 185).

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 185**  
**BOS software management menu**

```
The BOS (FE03.71) Software Management Menu

1 install      Install FE03.71 BOS Software
2 upgrade     Upgrade To FE03.71 BOS Software

---> Enter a number, a name, the initial part of name, or
      ? or <number>? for HELP, q to QUIT:
```

- 17** At the software management menu, type **1** and press [Return] to install the software.

The BOS installation procedure begins.

**Figure 186**  
**BOS installation, phase 1**

```
Phase 1. Identify Root And Usr File Systems Installation Disk Drive(s)

The BOS product supports root and usr file system installations
on the disk controllers listed below. The first column is the controller's
selection number, the second column is the name of the controller, and,
the third column is a brief description of the controller. Identify
at the prompt the root file system's installation disk controller type.

 1 MVME147 The MVME147 CPU Processor/SCSI Controller
 2 MVME167 The MVME167 CPU Processor/SCSI Controller
 3 MVME323 The MVME323 ESDI Disk Controller
 4 MVME327 The MVME327 SCSI Bus Controller
 5 MVME328 The MVME328 SCSI Host Adapter

---> Enter a number, a name, the initial part of a name, or
      ? or <number>? for HELP, or q to QUIT [MVME167]:
```

- 18** The system prompts you to select the disk controller. Whether you have an IPE Module or an Application Module, type **2** and press [Return] to select the MVME167 SBC card (this option supports both the IPE Module and the Application Module with an MVME167 card).

The system response is “Selected the ‘MVME167’ controller type.”



## Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)

**Figure 187**  
Disk drive number prompt

```
Selected MVME167 controller number 0.
This is the only controller number for the MVME167 controller
supported by the BOS product.

---> Enter the root file system's disk drive number
      (00, 10, 20, 30, 40, 50, 60, ?, q) [00]:
```

- 19** You are prompted to enter the root file system's disk drive number. Press [Return] to enter the default disk drive number (00).

The disk drive selection list appears.

**Figure 188**  
List of disk drive types

```
Selected default disk drive number '00'.
The MVME167 CPU Processor/SCSI Controller may be used to install
the BOS product on the following disk drive types.
The first column is the selection number, the second is the disk type
name (see the disk types associated with the ddefs(1M) utility), and
the third briefly describes the specific disk drive type:

 1 mcdcIV          Seagate/CDC WREN IV 300Mb Disk (94171/MVME875)
 2 mcdcV          Seagate/CDC WREN V 600Mb Disk (94181/MVME876)
 3 mcdcVII        Seagate/CDC WREN VII 1.2 GB Disk (94601/MVME877)
 4 mcdcIII        Seagate/CDC WREN III 150Mb Disk (94161/MVME874)
 5 mfuji2613      Fujitsu Pico Bird 3E 135Mb Disk (2613ESA/MVME863)
 6 mfuji2614      Fujitsu Pico Bird 3E 180Mb Disk (2614ESA/MVME864)
 7 mfuji2624      Fujitsu Pico Bird 4 500Mb Disk (2624SA/MVME866)
 8 ml47swift126   Seagate/CDC Swift 104 MB Disk (94351-126/MVME863)
 9 ml47swift201   Seagate/CDC Swift 172 MB Disk (94351-200S/MVME864)
10 mfuji2652      Fujitsu Super Humming Bird 1.75 Gb Disk (2652SA/MVME878)
11 mfuji2694      Fujitsu Pico Bird 5 1 Gb Disk (2694SA/MVME867)
12 mfuji2622      Fujitsu Pico Bird 4 300Mb Disk (2622SA/MVME865)
13 mmicr1578     MICROPOLIS 300Mb Disk (1578)
14 mmicr1588     MICROPOLIS 600Mb Disk (1588)
15 mmicr1598     MICROPOLIS 1Gb Disk (1598)
16 ml47sea3283   Seagate 240 Megabyte Disk (ST3283N)

---> Enter a number, a name, the initial part of a name, or
      ? or <number>? for HELP, or q to QUIT [mcdcIV]:
```

You noted the disk type for your system in step 14. (See Figure 184 for an example.) Most of the disk drives in the above figure are not used by Nortel. Some common disk types used by Nortel and their corresponding selection numbers are listed in the table below.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Note:** If your drive does not appear in Figure 184, but another drive of the same size is listed, use the option number for the listed drive. Alternatively, choose option 6 for M2614S, or option 16 for ST3283N. Although options 8, 9, and 16 start with the prefix “m147,” these options are also applicable to IPE Modules and Application Modules with MVME167 cards. If you experience difficulties, contact your Nortel support personnel.

Disk types used	Select this number
CDC ST1126N 9204 (104 Mbyte)	8
CDC ST1201N (172 Mbyte)	9
Fujitsu M2614S (180 Mbyte)	6
Seagate ST3283N (240 Mbyte)	16

**20** For this example, the m147sea3283 disk drive is being used. Type **16** and press [Return].

The system response is: “Selected the XXXX disk type,” where XXXX represents the disk type selected.

**Figure 189**  
**Format disk drive prompt**

```
Selected the 'm147sea3283' disk type.

If the root file system's disk is new or needs to be formatted,
it can be formatted now. In order for you to take advantage of
dynamic disk slicing capabilities and the use of the
sledit(1M) utility you may have to reformat the disk if it
was formatted with the R3V3 or earlier version of
the BOS disk formatter, dinit(1M).

WARNING - FORMATTING THE DISK WILL DESTROY ALL DATA ON THE DISK.

--> Format the root file system's disk drive (y, n, ?, q) [n]:
```

**21** You are prompted to format the root file system's disk drive. Type **y** and press [Return] to indicate that you wish to format the drive.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 190**  
**Same disk drive prompt**

The usr file system is often on the same disk drive as the root file system, but not always. The following questions determine where to install the usr file system.

```
---> Will the root and usr file systems be
      on the same disk drive? (y, n, ?, q) [y]:
```

- 22** You are prompted to indicate whether or not the root and user file systems will be on the same disk drive. Type **y** and press [Return] to indicate yes.

**Figure 191**  
**Slice number prompt**

The default usr file system slice number for the MVME167 controller is slice number 2, but it may be changed. Enter below, the slice number where the usr file system is to be installed.

```
---> Enter the slice number for the usr file system (0-6, ?, q) [2]:
```

- 23** You are prompted to enter the user file system slice number. Press [Return] to use the default slice number (2).  
Phase 2 of the BOS installation begins, and the slice table appears. Figures 192-195 show the slice tables for four different disk drives.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 192**  
**Disk-slicing table for 104-Mbyte disk drive**

```
Phase 2. Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size fs size fsname  vol-id  info
0      648     40000  40000  root   R3      1
1      40648   20000   0      root   R3      1h8
2      60648   148484  148484  usr    R3      1
3      0         0       0      root   R3      1h8
4      0         0       0      root   R3      1h8
5      0         0       0      root   R3      1h8
6      0         0       0      root   R3      1h8
7      0      209132   0      root   R3      1h8

---> Modify any of these parameters? (y, n, ?, q): [n]
```

**Figure 193**  
**Disk-slicing table for 172-Mbyte disk drive**

```
Phase 2. Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size  fs size  fsname        vol-id  K
0      648     60000    60000    root          R3      1
1      60648   40000     0      root          R3      1
2      100648  180000   180000   usr R3        R3      1
3      280648  54827    0      root          R3      1
4      0         0         0      root          R3      1
5      0         0         0      root          R3      1
6      0         0         0      root          R3      1
7      0      335475    0      root          R3      1

---> Modify any of these parameters? (y, n, ?, q): [n]
```

## Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)

**Figure 194**  
Disk-slicing table for 180-Mbyte disk drive

```
Phase 2. Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size fs size fsname  vol-id  info
0      648     60000 60000  root   R3      1
1      60648   40000  0      root   R3      1h8
2      100648  180000 180000  usr    R3      1
3      280648   71528  0      usr    R3      1h8
4      0        0      0      0      0      1h8
5      0        0      0      0      0      1h8
6      0        0      0      0      0      1h8
7      0        352176 0      0      0      1h8

--> Modify any of these parameters? (y, n, ?, q): [n]
```

**Figure 195**  
Disk-slicing table for 240-Mbyte disk drive

```
Phase 2. Configure Root And Usr File-Systems And Swap Area

Check the following slicing information for the root file system's disk
drive; indicate below whether you wish to modify this information:

slice  offset  sl size fs size fsname  vol-id  info
0      648     60000 60000  root   R3      1
1      60648   40000  0      root   R3      1h8
2      100648  378000 378000  usr    R3      1
3      478648   142    0      usr    R3      1h8
4      0        0      0      0      0      1h8
5      0        0      0      0      0      1h8
6      0        0      0      0      0      1h8
7      0        478800 0      0      0      1h8

--> Modify any of these parameters? (y, n, ?, q): [n]
```

- 24** You are prompted to modify the parameters. Press [Return] to indicate that you don't wish to change any parameters.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 196**  
**Install OLMP prompt**

```
----> Install On-line Manual Pages Object Package (OLMP)? (y, n, ?, q) [n]:
```

- 25** You are prompted to indicate whether you wish to install online manual pages. Type **y** and press [Return] to indicate yes.

**Figure 197**  
**Install TARS prompt**

```
----> Install On-line Problem Descriptions (Tars on Tape)? (y, n, ?, q) [n]:
```

- 26** You are prompted to indicate whether you wish to install online problem descriptions. Nortel does not use these descriptions. Type **n** and press [Return] to indicate no.

**Figure 198**  
**Verify installation prompt**

```
----> Do you want to verify correct installation? (y, n, q) [y]:
```

- 27** You are prompted to indicate whether you wish to verify correct installation. Press [Return] to indicate yes.

Confirmation of your selection appears, along with a summary of the installation information. The summary should look exactly like the one in Figure 199, with the possible exception of the disk drive entry ('m147sea3283').

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 199**  
**Software installation summary**

```
Selected to run mkcomply to verify correct installation.

Check the information below.  If any part of the information is incorrect,
the previous questions will have to be answered again.

    * Format and install the new bootloader on the MVME167,
      controller #0, disk drive #00,
      using the ddefs(1M) description 'm147sea3283'.

    * Create a root file system using 1 Kbyte logical blocks
      on slice 0 on the MVME167, controller #0, disk drive #00.

    * Create a swap area in slice 1 on the
      MVME167, controller #0, disk drive #00.

    * Create a usr file system using 1 Kbyte logical blocks
      on slice 2 on the MVME167, controller #0, disk drive #00.

    * Install On-line Manual Pages Object Package (OLMP).
    * Do Not Install On-line Problem Descriptions (Tars on Tape)
----> Is all of this information correct (y, n, q, ?):
```

**28** If the summary information is correct, type **y** and press [Return]. If it is not correct, type **n**, press [Return], and then enter the information correctly when prompted.

When the information is correct and you reply **y** to the above prompt, phases 3 and 4 of the installation begin.

**Note:** Phases 3 and 4 may take from 30 to 90 minutes to complete.

**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 200**  
**BOS installation, phases 3 and 4**

```
***> Checking tape in drive

Phase 3. Prepare Installation Disk Drive(s)

***> Retensioning tape (in background)
***> Formatting root file system's disk drive
***> Writing slice table to /dev/rdisk/m167_00s7
***> Creating the root file system
***> Labeling the root file system
***> Creating the usr file system
***> Labeling the usr file system
***> Installing boot-loader on root file system's disk drive
***> Mounting root file system as /root
***> Making the /tmp directory
***> Making the /usr directory
***> Mounting usr file system as /root/usr

Phase 4. Install BOS Software

***> Waiting for tape to complete retensioning
***> Copying files; this will take from 10-35 minutes
    depending upon your system configuration...
70240 blocks
1200 blocks
10960 blocks
***> Making the root file system lost+found directory

Reserving 160 entries
***> Making the usr file system lost+found directory

Reserving 960 entries
***> Installing /etc/badtracks/m167_00 bad spot list
***> Creating sysadm(1M) package information file
***> Setting up the new operating system
***> Creating root and usr file system associated device nodes
***> Setting permissions on installation disk's root directory
***> Running mkcomply to confirm correct installation
***> Setting root's password entry
New password:
```

- 29 At the "New password:" prompt, press [Return].  
The system responds with "Re-enter new password:"
- 30 Press [Return] again.



**Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card (continued)**

**Figure 201**  
**BOS installation, completion**

```
***> Unmounting all mounted file systems
***> Synchronizing the installation disk

      BOS product installation is completed.

You must RESET the system and allow it to autoboot from the hard disk

      *****
      **** RESET THE SYSTEM ****
      *****
```

- 31** Remove the operating system tape from the drive.
- 32** Proceed with Procedure 7 and go through the setup.

## Procedure 7: Reboot and go through setup

If you have just installed the operating system tape, ensure that you perform the following procedure before you load the application tape.

**Note:** If you are upgrading Meridian Link to co-residency and your Application Module needs an MVME332 ACC card, ensure that you have installed the ACC card before starting this procedure (refer to Procedure 29: Installing MVME332XT or MVME332XTS ACC card, in Chapter 17, “Hardware upgrade”).

- 1 Press the red RESET button on the MVME147 or MVME167 SBC card or the IPE Module.

System start-up messages appear on the system console (see Figures 202 and 203).

**Figure 202**  
**MVME147 Application Module start-up messages**

```
Copyright Motorola Inc. 1989,1990, All Rights Reserved
VME147 Monitor/Debugger Release 2.42 - 08/01/91
CPU running at 25 MHz

FPC passed test
MMU passed test

COLD Start

Onboard RAM start = $00000000, stop = $007FFFFF
No offboard RAM detected
```

**Figure 203**  
**IPE Module or MVME167 Application Module start-up messages**

```
Copyright Motorola Inc. 1988 - 1992, All Rights Reserved
MVME167 Debugger/Diagnostics Release Version 1.4 - 07/22/92
COLD Start

Local Memory Found =00800000 (&8388608)

MPU Clock Speed =25Mhz
```

**Procedure 7: Reboot and go through setup (continued)**

The autoboot process then starts. Autoboot messages for the IPE Module or MVME167 card are shown in Figures 204 and 205. Messages for the MVME147 card are similar.

A series of test messages appear on one line across the screen for approximately ten minutes, then the system start-up messages appear.

**Figure 204**  
**System autoboot messages 1**

```

Testing Complete
Autoboot in progress ... To abort hit <BREAK>

Booting from: VME167, Controller 0, Drive 40
Loading: Operating System

Volume: V/68

IPL loaded at: $001F0000
MVMETAPE IPL Version 1.0

*****

                System V/68 Release R3V7 M68040 Version 920526

                        Real mem = 6291456
                        Avail mem = 4956160
                        Buffers   = 60

*****
Copyright (c) 1984-1992 Motorola Inc. All rights reserved

INIT: SINGLE USER MODE
***
erase = # kill = @ intr = DEL quit = ^|
***
167 SCSI configuration
Device   Addr Vers Revision  Serial#  Blocks  Size Vendor Description
-----  -
Disk     00 0002 9324...  .....  0478845 0512 SEAGATE ST3283N
Tape     40 0001 RV F...  .....  0000000 0000 TEAC   MT-2ST/N50
Enter <cr> to pause in a single user shell before init.

Default boot sequence continuing...
The system is coming up. Please wait.

```

**Procedure 7: Reboot and go through setup (continued)****Figure 205**  
**System autoboot messages 2**

```

This machine has not been used as a customer machine yet. The messages that
follow are from checking the built-in file systems for damage that might have
occurred during shipment. As long as you do not see either of the messages
BOOT SYSV68
                                or
                                FILE SYSTEM WAS MODIFIED
all is well. If either message does come out, call your service representative.
However, the machine is still usable unless you are told otherwise.
Checking file systems:

/dev/root
File System:  root Volume:  R3

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List
1992 files 27376 blocks 31684 free

/dev/usr
File System:  usr Volume:  R3

** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List
2861 files 44730 blocks 327360 free

Node name set to sysV68.

Welcome!
This machine has to be set up by you. When you see the "login" message type
setup
followed by the RETURN key. This will start a procedure that leads you through
those things that should be done the "first time" the machine is used.

Until you do so, the above filesystem shipment damage check will be run
each time you boot.

mount -f S51K /dev/usr /usr
Checking for system dump ...
Expreserve notification performed.
Error logging started.
Stream Error logging started.
netspec "tcpip" not set up.
Line printer scheduler started.
The system is ready.

Console Login:

```

- 2 At the "Console Login:" prompt, type **root** and press [Return] to log in as the root user.
- 3 At the "Password:" prompt, press [Return].  
The root password is reset once the application is installed.

**Procedure 7: Reboot and go through setup (continued)**

- 4 At the “#” prompt, type **portconfig -m** and press [Return].  
The following messages appear on your screen.

**Figure 206**  
**Portconfig warning**

```
THIS WILL REMOVE EXISTING tty NODES IN '/dev' AND  
CREATE NEW ONES BASED ON THE DRIVERS CONFIGURED INTO THE  
MOST RECENTLY BUILT KERNEL IN '/usr/src/uts/m68k/cf' AND THE CURRENT  
HARDWARE CONFIGURATION. ARE YOU SURE THIS IS WHAT  
YOU WANT TO DO?  
(default = n) [y, n]:
```

- 5 If there is a tape in the drive, unlock the tape drive and remove the tape.
- 6 Type **y** and press [Return].  
The port configuration messages (shown in Figure 207) appear on your screen.

**Note:** Figure 207 shows an entry about adding MVME167 controller board entries. This is present even though the SBC card is an MVME147 card or the module is an IPE Module, and is a result of the software supporting the IPE Module and the MVME147 and MVME167 cards. Ignore the entry.

**Procedure 7: Reboot and go through setup (continued)**

**Figure 207**  
**Portconfig messages**

```

-----
Found a vme332xt driver entry in /usr/src/uts/m68k/cf/master (major # 34)
Found a configured board (board 0)
Removing existing /dev/tty entries for module 1
    rm -f /dev/ttyl[0123456789]
Making tty entries for board 0
Ports appear on backpanel module 1/dev:
ttyl1 ttyl2 ttyl3 ttyl4 ttyl5 ttyl6 ttyl7 ttyl8 ttyl9
Adding m332xt Controller board 1 associated entries to /etc/inittab.
-----
Found a m564 driver entry in /usr/src/uts/m68k/cf/master (major # 40)
-----
Found a z8530 driver entry in /usr/src/uts/m68k/cf/master (major # 33)
Found a configured board (board 0)
-----
Found a m68lcon driver entry in /usr/src/uts/m68k/cf/master (major # 42)
-----
Found a c240con driver entry in /usr/src/uts/m68k/cf/master (major # 45)
Adding MVME167 Controller board associated entries to /etc/inittab.
-----
Removing /dev/tty entries for non-configured back panel modules:
    rm -f /dev/tty2[123456789]
    rm -f /dev/tty3[123456789]
    rm -f /dev/tty4[123456789]
    rm -f /dev/tty5[123456789]
    rm -f /dev/tty6[123456789]
    rm -f /dev/tty7[123456789]
    rm -f /dev/tty8[123456789]
    rm -f /dev/tty9[123456789]
-----

Use 'sysadm ttygmt' to turn these entries on in /etc/inittab

Current back panel layout should be as follows:
712/147      1437/332xt

  [ ] [ ]
  tty  cons
  02

  [ ] [ ]
  tty  tty
  03  01

  [ ] [ ]
 ether  net

  [ ] [ ]
  pr    SCSI
#

```

**Procedure 7: Reboot and go through setup (continued)**

7 At the “#” prompt, type **setup** and press [Return].

The setup procedure begins.

**Figure 208**  
**Time zone prompt**

```
The first step is to set the timezone, date, and time of the system
clock.

Current time and time zone is: 12:37 EDT
Change the time zone? [y, n, ?, q]
```

8 You are prompted to change the time zone. Type in your response (**y** if you wish to change the time zone, **n** if the time zone is already correct) and press [Return].

If you typed **n**, go on to step 11 where you’re prompted to change the date and time. If you typed **y**, the time zone selection list appears.

**Figure 209**  
**Time zone menu**

```
Available time zones are...
1. Greenwich (GMT)
2. Atlantic (AST & ADT)
3. Eastern (EST & EDT)
4. Central (CST & CDT)
5. Mountain (MST & MDT)
6. Pacific (PST & PDT)
7. Yukon (YST & YDT)
8. Alaska (AST & ADT)
9. Bering (BST & BDT)
10. Hawaii (HST)
11. Middle European (MET)
12. East European (EET)
13. Set TZ variable for any other time zone info

Enter zone number:
```

### Procedure 7: Reboot and go through setup (continued)

- 9 At the “Enter zone number:” prompt, type the number corresponding to your time zone and press [Return].

If your time zone is not listed in time zones 1–12, type **13** and press [Return]. You will see explanatory messages. At the “Enter 3-letter time-zone-name” prompt (Figure 210), type three letters to represent your time zone and press [Return]. At the “Enter time difference from GMT” prompt, type the difference between your local time and Greenwich Mean Time (GMT). Use a minus if your time zone is west of GMT.

**Figure 210**  
Additional time zone menu

```
Enter 3-letter time-zone-name (a thru z or A thru Z)
Enter time difference from GMT (use "-" if west of GMT)
```

**Figure 211**  
DST prompt

```
Does your time zone use Daylight Savings Time during the year? [y, n, ?, q]
```

- 10 You are prompted to indicate whether your time zone uses Daylight Savings Time during the year. Type in your response (**y** if Daylight Savings Time applies, **n** if it does not) and press [Return]. The system response reflects whether or not the Daylight Savings Time selection was changed.

**Figure 212**  
Date and time change prompt

```
Time zone now changed.
Note: Any logins and processes running when the time zone changes, and
all their child processes, will continue to see the old time zone.
The cron will be restarted at the end of this procedure.
Current date and time: Tue. 06/29/93 09:37
Change the date and time? [y, n, ?, q]
```



**Procedure 7: Reboot and go through setup (continued)**

- 11 You are prompted to change the date and time. If you do not wish to change the date and time, type **n**, press [Return], and proceed to step 17. If you wish to change the date and time, type **y** and press [Return].

**Figure 213**  
**Month prompt**

```
Month    default 06    (1-12):
```

- 12 When prompted, type the number corresponding to the current month and press [Return].

**Figure 214**  
**Day prompt**

```
Day      default 29    (1-31):
```

- 13 When prompted, type the day and press [Return].

**Figure 215**  
**Year prompt**

```
Year     default 93    (70-99):
```

- 14 When prompted, type the year and press [Return].

**Figure 216**  
**Hour prompt**

```
Hour     default 09    (0-23):
```

- 15 When prompted, type the hour and press [Return].

**Figure 217**  
**Minute prompt**

```
Minute   default 37    (0-59):
```

**Procedure 7: Reboot and go through setup (continued)**

16 When prompted, type the minutes and press [Return].

**Figure 218**  
**Date and time set prompt**

```
Date and time will be set to: 6/29/93 09:37. OK? [y, n, q]
```

17 You are prompted to confirm the date and time. Type **y** and press [Return].

Once the application starts, the time will be set to the time on the Meridian 1. The system response reflects any time or time zone change with a “cron aborted” message.

**Figure 219**  
**Time change confirmation**

```
Sat Sep 18 11:19:00 EDT 1993
The date and time are now changed.
cron aborted: SIGTERM
The cron has been restarted to pick up the new time and/or time zone.

The next step is to set up logins.
The first one you make should be for yourself.

Anytime you want to quit, type "q".
If you are not sure how to answer any prompt, type "?" for help,
or see the Administrator's Guide.

If a default appears in the question, press <RETURN> for the default.
```

**Note:** Ensure that you respond with **q** to the remaining prompts. Entering any other data may prevent applications from functioning properly.

**Figure 220**  
**User's name prompt**

```
Enter user's full name [?, q]:
```

18 You are prompted to enter a user login name. Type **q** and press [Return].

### Procedure 7: Reboot and go through setup (continued)

**Figure 221**  
**Administrative passwords prompt**

```
Do you want to give passwords to administrative logins? [y, n, ?, q]
```

- 19** You are prompted to give passwords to administrative logins. Type **q** and press [Return].

**Figure 222**  
**Change system name prompt**

```
This machine is currently called "sysV68".  
Do you want to change it? [y, n, ?, q]
```

- 20** You are prompted to change the name of the system. For security reasons, you should change the system name from the default, sysV68. Type **y** and press [Return].

**Figure 223**  
**System name prompt**

```
What name do you want to give it? [q]
```

- 21** You are prompted for the new system name. Type the new name and press [Return]. Figure 224 appears.

**Figure 224**  
**Setup end message**

```
This completes your initial setup of the machine. You may now log into your  
login.  
#
```

- 22** To install the application software, go to Procedure 8, step 3.
- 23** If you need to go to the "Console Login:" prompt (for example, if you are not installing Meridian Link or CCR immediately), type **exit** and press [Return].

## Procedure 8: Load the application software from tape

Before loading the application tape (labelled Tape 2 of 2), ensure that you reboot and go through setup as described in Procedure 7. This procedure assumes you are at the “Console Login:” prompt. If you have just performed Procedure 7, you may see the “#” prompt; if so, skip steps 1 and 2 and go to step 3.



### WARNING

If you plan to use Ethernet, ensure that your module is connected to a working Ethernet backbone.

- 1 At the “Console Login:” prompt, type **root** and press [Return] to log in as the root user.
- 2 At the “Password” prompt, press [Return].
- 3 At the root shell prompt “#,” type **sysadm** and press [Return].

**Figure 225**  
**System administration menu**

```
                                SYSTEM ADMINISTRATION

1 diagnostics      system diagnostics menu
2 diskmgmt         disk management menu
3 filemgmt         file management menu
4 machinmgmt       machine management menu
5 packagemgmt      package management menu
6 softwaremgmt     software management menu
7 syssetup         system setup menu
8 ttygmt           tty management menu
9 usermgmt         user management menu

Enter a number, a name, the initial part of a name, or
? or <number>? for HELP, q to QUIT:
```

- 4 At the system administration menu, type **6** and press [Return].

### Procedure 8: Load the application software from tape (continued)

**Figure 226**  
Software management menu

```
                                SOFTWARE MANAGEMENT

1 installpkg      install new software package onto built-in disk
2 listpkg        list packages already installed
3 removepkg      remove previously installed package from built-in disk

Enter a number, a name, the initial part of a name, or
? or <number>? for HELP, q to QUIT:
```

- 5 At the software management menu, type **1** and press [Return] to select the install option.

**Figure 227**  
Drive selection menu

```
Select which drive to use:
  1 ctape          2 diskette1          3 hddiskette1
Enter a number, a name, the initial part of a name, or
? for HELP, q to QUIT:
```

- 6 You are prompted to select a drive. Type **1** and press [Return] to select the ctape (cassette tape) option.

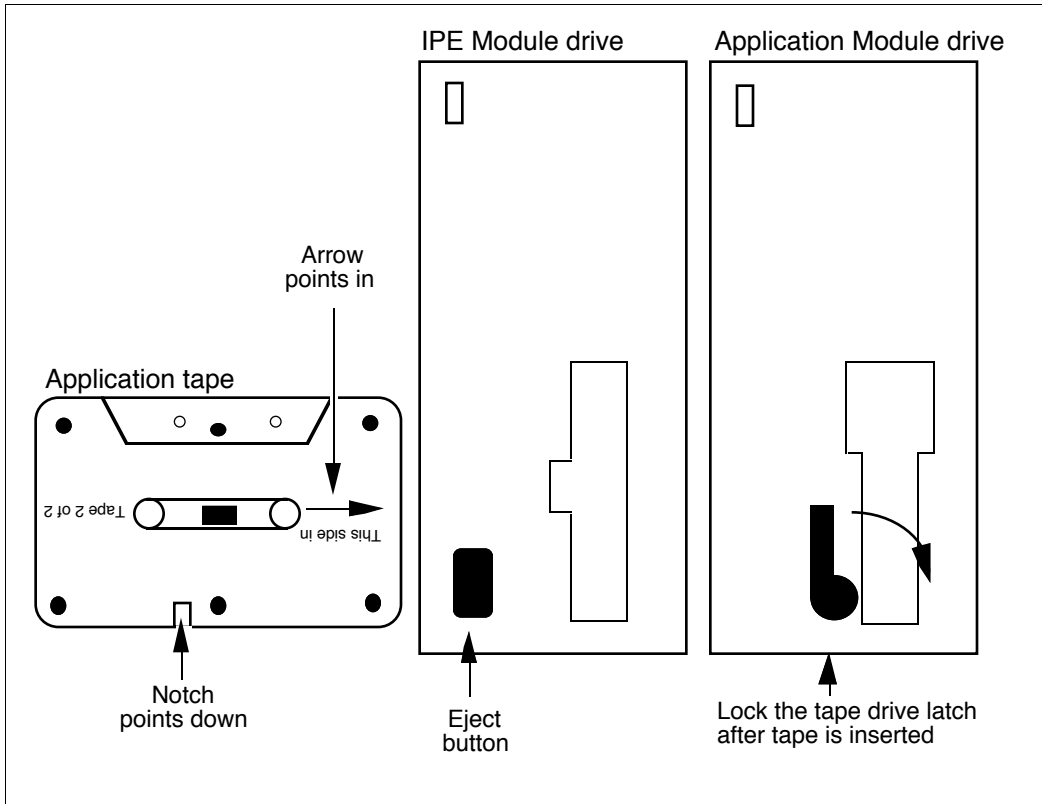
**Figure 228**  
Insert medium prompt

```
Insert the removable medium for the package you want to install
into the ctape drive.
Press <RETURN> when ready. Type q to quit.
```

- 7 You are prompted to insert the medium. Insert the application tape (tape 2 of 2) into the tape drive and wait until the tape indicator light turns off.  
Once the tape is inserted correctly and the latch is completely closed, the tape indicator light goes on, flashes briefly, then goes off again. Wait until the light goes off before proceeding to the next step.

**Procedure 8: Load the application software from tape (continued)**

**Figure 229**  
Insert tape into the tape drive



**Procedure 8: Load the application software from tape (continued)**



**WARNING**

**Risk of system interruption**

Do not attempt to press a keyboard key until the tape active indicator light goes from on to off and stays off. The tape drive can enter a nonoperational state if operations are attempted before the drive is completely ready.

- 8 When the tape indicator light is off, press [Return] to start the auto-loading of the application software.  
The system response is “Installing Meridian Applications.”
- 9 You are prompted to press [Return] to continue. Press [Return].  
A series of software install messages appears for approximately ten minutes (Figure 230). If an error occurs, contact your Nortel support personnel.

**Figure 230**  
**Software install messages 1**

```
190 blocks
Preparing for installation. Please wait.
Preparing for installation successful.
10 blocks
30 blocks
7780 blocks
1100 blocks
110 blocks
1080 blocks
2080 blocks
430 blocks
11000 blocks
11320 blocks
```

(A series of messages appears on the screen.)

```
.
.
Installation Complete.
Host based X.25 is installed.

Setting file permissions and ownerships. Please wait.
Setting file permissions and ownerships completed.

06/01/94 19:56:44 Invoking maint
```

**Procedure 8: Load the application software from tape (continued)**

**Figure 231**  
**Meridian 1 ID prompt**

Please enter the Meridian 1 ID of this site:  
(or Q or q to quit)

- 10** The system prompts you for the Meridian 1 ID. Type your ID and press [Return].

**Note:** If you make a mistake while typing your Meridian 1 ID or keycode, do not try to backspace and correct the error. Instead, continue until step 19, where you will be able to type n, press [Return], and return to step 10.

**Note:** Input for the Meridian 1 ID is case sensitive; input for the keycode is not case sensitive.

**Figure 232**  
**Keycode prompt 1**

Please enter your keycode (5 groups of 4 characters):  
Keycode group 1 (or Q or q to quit):

- 11** The system prompts you for your keycode. Type the first four-character group of your keycode and press [Return].

**Figure 233**  
**Keycode prompt 2**

Keycode group 2 (or Q or q to quit):



**Procedure 8: Load the application software from tape (continued)**

- 12 You are prompted for the second group of keycode characters. Type the second group and press [Return].

**Figure 234**  
**Keycode prompt 3**

Keycode group 3 (or Q or q to quit):

- 13 You are prompted for the third group of keycode characters. Type the third group and press [Return].

**Figure 235**  
**Keycode prompt 4**

Keycode group 4 (or Q or q to quit):

- 14 You are prompted for the fourth group of keycode characters. Type the fourth group and press [Return].

**Figure 236**  
**Keycode prompt 5**

Keycode group 5 (or Q or q to quit):

- 15 You are prompted for the fifth group of keycode characters. Type the fifth group and press [Return].

A list of configured applications appears.

**Note:** Optional feature prompts will not appear if the features were not configured in the keycode. For example, if Meridian Link was not purchased, the prompts in Figures 237, 238, and 239 will not appear.

**Figure 237**  
**Meridian Link protocol prompt**

Please enter the Meridian Link protocol, x for X.25, <cr> for TCP/IP):

**Procedure 8: Load the application software from tape (continued)**

- 16** If you are activating the Meridian Link application, you are prompted to enter the Meridian Link protocol.

If you are using the X.25 protocol, type **x**, press [Return], then go to step 19.

If you are using the TCP/IP protocol, press [Return], then go to step 17.

**Figure 238**  
**IP address prompt**

```
Meridian Link using a TCP/IP connection.
```

```
If you would like a default gateway IP address configured or changed, please
enter the IP address in internet dot notation (e.g. 47.82.45.10). For no change
enter <cr>:
```

- 17** To configure or change a default gateway IP address, type the IP address in the decimal format and press [Return]. If no modification or configuration is required, simply press [Return].

**Figure 239**  
**Subnet mask prompt**

```
Saving default gateway IP address:
```

```
If you would like a default subnet mask configured or changed,
please enter the subnet mask (e.g. 255.255.0.0). For no change enter <cr>:
```

- 18** To configure or change a default subnet mask, type the subnet mask address in decimal format and press [Return]. If no modification or configuration is required, simply press [Return].

## Procedure 8: Load the application software from tape (continued)

**Figure 240**  
**List verification prompt**

```
Saving default subnet mask:

The following applications are configured:
Meridian Link
Large CCR

The following packages are configured:
1
96
97
98
99
100
101

Ethernet NSE software is enabled.

Is this correct (y/n/q)?
```

The system lists the application or applications installed.

**Note:** Figure 240 only shows applications that have been selected; they are actually enabled when the system reboots at the end of this procedure.

To check that the correct application has, or applications have, been installed, refer to the checklist (Table 17) you completed in the “IPE Module and Application Module: Meridian Link/CCR software” section in Chapter 6, “Site survey/installation checklist.”

**19** The system prompts you to verify that the list is correct.

If the list is incorrect, type **n** and press [Return]. You are returned to step 10. Rekey your Meridian ID and keycode. If the list of applications is still incorrect, type **q** and press [Return]. The message “Software not configured” appears. Call your Nortel support personnel for a new keycode.

If the list is correct, type **y** and press [Return].

If you did not purchase CCR or NSE, go to step 25.

If you did not purchase CCR but you have enabled NSE, go to step 21. For more information about Ethernet connections, refer to “Installing Ethernet LAN support” in Chapter 9, “Meridian Link/CCR interface cabling.”

**Procedure 8: Load the application software from tape (continued)**

If you have purchased CCR, go to step 20.

**Figure 241**  
**CCR customer number prompt**

```
Please enter the CCR customer number (0-99):
```

- 20** You are prompted to enter your CCR customer number (Figure 241). Type the number and press [Return].

**Figure 242**  
**Ethernet connection prompt**

```
Installing NSE R3V7.1. Please wait.  
Is your module connected to the Ethernet (y/n) ?
```

- 21** You are asked whether your IPE Module or Application Module is connected to Ethernet (Figure 242).

**Note:** Your module must be connected to Ethernet before you type **y**.

For more information about Ethernet connections, refer to “Installing Ethernet LAN support” in Chapter 9, “Meridian Link/CCR interface cabling.”

If your module is not connected to Ethernet, type **n** and press [Return]. Go to step 25.

If you are connected to Ethernet and you plan to use it in the near future, type **y** and press [Return]. You see a message asking you to wait. Then you see more installation messages (Figure 243). Go to step 22.

If you are connected to Ethernet but do not plan to use it in the near future, you may choose to type **n** and press [Return]. Disabling Ethernet support increases the processing power available to your application(s). Go to step 25.

**Procedure 8: Load the application software from tape (continued)****ATTENTION**

If you disable Ethernet support, you must perform a complete reinstallation of the base operating system and application(s) before you can reenable Ethernet support.

**Note:** A two-minute pause occurs at this point before the following messages shown in Figure 243 appear.

**Figure 243**  
**Software install messages 2**

```
Configuring your system for NSE. Please wait.
/usr/src/uts/m68k/sysgen/sysgen -l /usr/src/uts/m68k/sysgen -big
  make -f io.mk MAKE=make FRC= DASHG= DASHO=-O INCRT=/usr/include
LIBDIR=./cf SYS= CFLAGS= -O -I/usr/include -DLAI -DINKERNE
L -DSTREAMS -DBRIDGE CPU=m68k CC=/bin/pcc/cc
  make -f scsi.mk "MAKE=make" "CC=/bin/pcc/cc" "FRC=" "INCRT=/usr/include"
"DASHO=-O" "CFLAGS=-O -I/usr/include -DLAI -DINKER
.
.
.
Warning: ./config.h: 358: NBLK4 redefined
  rm -f sysV68 sysV68.nm
  ld -o sysV68 ld.VME131 m68kvec.o low.o conf.o lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tc
pip lib.nfs lib.bppv2 lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scsi
lib.wan lib.x25 lib.stub lib.io lib.ml lib.os
lib.s5 lib.bpp lib.fpack lib.nosrc lib.fpsp lib.du lib.tc pip lib.nfs lib.bppv2
lib.c37x lib.kdb lib.lnc lib.nsedebug lib.sbc lib.scs
i lib.wan lib.x25 lib.stub
  mcs -da "SYSTEM V/68 - R3V7" sysV68
  chmod 755 sysV68
  ./kdb/kdbnm -q sysV68
../kdb/kdbnm: not enough space for symbol table
../kdb/kdbnm: need total of 145908 bytes at k_syntab
../kdb/kdbnm: 135168 bytes were reserved for symbols, 135168 bytes were used
sysV68 made.
```

### Procedure 8: Load the application software from tape (continued)

**Figure 244**  
**Module name prompt**

```
ADD MODULE NAME AND ADDRESS TO TCPIP TRANSPORT PROVIDER DATABASE

If you are not sure how to answer any prompt, type "?" for HELP.

Enter the MODULE NAME to be added to the tcpip transport
provider database [?, or module name]:
```

- 22** You are prompted for the name of the Application Module or IPE Module (Figure 244). (The term “module name” refers to an Ethernet host computer, which in this case is the IPE Module or Application Module.) Type the module name and press [Return]. The module name must not exceed eight alphanumeric characters. For more information about module names, consult your network administrator.

**Figure 245**  
**Module address prompt**

```
Enter the MODULE ADDRESS to be added to the tcpip transport
provider database [?, or module address]:
```

- 23** You are prompted for the address of the IPE Module or Application Module (Figure 245). Type the module address and press [Return]. The module address must be four numbers separated by periods, such as “12.234.67.89.” For more information about module addresses, consult your network administrator.

**Figure 246**  
**Reenter prompt**

```
If you made any mistakes in entering the module name and IP address,
you can correct them. Would you like to re-enter the module name or
IP address? [y, n]
```

**Procedure 8: Load the application software from tape (continued)**

**24** You are asked whether you want to reenter the module name or address (Figure 246).

If you have not made a mistake, type **n** and press [Return].

If you want to reenter the module name and address, type **y** and press [Return]; you will return to step 22.

**Figure 247**  
**Reboot prompt**

```
Would you like to reboot the system now (y/n) ?
```

**25** You are prompted to reboot the system (Figure 247). Type **y** and press [Return].

**Figure 248**  
**Reboot messages 1**

```
INIT: New run level: 6
The system is coming down. Please wait.
System services are now being stopped.
Terminating Applications
/usr/bin/maint: /dev/tty: cannot create
cron aborted: SIGTERM

The system is down.

NOTICE: System Reboot Requested (0)
```

The system clears and the messages in Figure 249 appear.

**Note:** The following figure is illustrative only. Your messages may be different, depending on the application(s) purchased.

## Procedure 8: Load the application software from tape (continued)

**Figure 249**  
**Reboot messages 2**

```
Copyright Motorola Inc. 1988 - 1992, All Rights Reserved

M4120 Debugger/Diagnostics Release Version 1.1 - 09/30/92 (IR01)
COLD Start

Local Memory Found =01000000 (&16777216)

MPU Clock Speed =25Mhz

Autoboot in progress... To abort hit <BREAK>
Booting from: M4120, Controller 0, Drive 0
Loading: Operating System

.                                     (diagnostic messages)
.

Initializing For Applications
    Configure Link 0 : successful
    Enable Link 0 : successful

    Application release successful
Starting Applications

06/01/94 20:55:53 Starting CCR Application...
Starting Customer Controlled Routing Processes...

Performing modem reset...
Connected
Sending atz
to the device.
Done modem reset.
The system is ready.

Console Login:
```

- 26** Remove the application tape from the cassette tape drive.

The appearance of the “Console Login:” prompt indicates that the new application software is now installed. You may now log in to the system to perform other commands. You may also restore configuration files and data files from backup if necessary (Procedure 9: Restore configuration files and data files from the backup tape).



## Procedure 9: Restore configuration files and data files from the backup tape

- 1 At the “Console Login:” prompt, type **maint** and press [Return].
- 2 You are prompted for a password. Type the password and press [Return]. The default password is **maint**.
- 3 At the “maint>” prompt, type **rstdata** and press [Return].

Prompts similar to the following appear:

### Figure 250 Rstdata prompt

```
Make sure tape is in drive  
When ready, enter 'y' to continue, or 'n' to quit: [y,n]
```

- 4 You are prompted to prepare the tape drive. Insert the most recent backup tape for your application data.

**Note:** Wait until the tape indicator light turns off before proceeding to the next step.

- 5 When the tape is ready, type **y** and press [Return].

### Figure 251 Stop applications prompt

```
The restore will not succeed with an application running.  
Enter 'y' to stop the application(s) and continue, or 'n' to quit: [y,n]
```

- 6 If an application is not running, go to step 7. If an application is running, you will be prompted to stop all applications. Type **y** and press [Return].

**Procedure 9: Restore configuration files and data files from the backup tape (continued)**

**Figure 252**  
**Rstdata messages screen 1**

```
Stopping application(s)
02/02/94 16:00:27 Notifying Meridian Link of Shutdown...
02/02/94 16:00:37 Stopping Meridian Link application

Release Communication Resources...

Please wait while tape file list is extracted.
```

You may be prompted about restoring link control files (Figure 253).

**Figure 253**  
**Restore link control files prompt**

```
Link control files are present in this Restore list.
Do you want to restore link control files (y/n)?
```

- 7 If you have already configured the links for Release 3 (refer to Chapter 15, “Link configuration”) and you do not want to overwrite them with backed-up Release 2 configuration, type **n** and press [Return].

If you have not configured the links for Release 3, or if you wish to restore the Release 2 configurations, type **y** and press [Return].

**Procedure 9: Restore configuration files and data files from the backup tape (continued)**

**Figure 254**  
**Rstdata messages screen 2**

```
Files will be restored to:
/usr/maint/files/AMprofile
/usr/maint/files/AutoStart
/usr/maint/files/IncrDY
/usr/maint/files/IncrTM
/usr/maint/files/Port
/usr/maint/files/Prefs
/usr/maint/files/Speed
/usr/maint/conf/hdlchlnk.dataf
/usr/maint/conf/hdlcmlnk.dataf
/usr/maint/conf/lh.config
/usr/mlusr/conf/loop13DCE.d
/usr/mlusr/conf/loop13DTE.d
/usr/mlusr/conf/loop31DCE.d
/usr/mlusr/conf/loop31DTE.d
/usr/mlusr/conf/tscfg.datafile
/usr/mlusr/conf/vlink.datafile
/usr/mlusr/conf/x25bcf333.2
/usr/mlusr/conf/x25hlink.datafi

(Actual list of directories may differ depending on the application)

Please enter 'y' to do restore, or 'n' to quit: [y,n]
```

**8** You are prompted to restore the files. Type **y** and press [Return].

Various prompts appear, followed by the message “Restore successful” when the procedure is completed (Figure 255).

**Note:** The following figure is illustrative only. It shows restoration messages for Meridian Link. If you are restoring for CCR, your messages will be different.

### Procedure 9: Restore configuration files and data files from the backup tape (continued)

**Figure 255**  
Rstdata messages screen 3

```

Starting restore
x 4k of 6k [1] usr/maint/files/AMprofile
x 4k of 10k [1] /usr/maint/files/AutoStart
x 4k of 14k [1] /usr/maint/files/IncrDY
x 4k of 18k [1] /usr/maint/files/IncrTM
x 4k of 22k [1] /usr/maint/files/Port
x 4k of 26k [1] /usr/maint/files/Prefs
x 4k of 30k [1] /usr/maint/files/Speed
x 4k of 34k [1] /usr/maint/conf/hdlchlnk.dataf
x 4k of 38k [1] /usr/maint/conf/hdlcmlnk.dataf
x 4k of 42k [1] /usr/maint/conf/lh.config
x 4k of 46k [1] /usr/mlusr/conf/loop13DCE.d
x 4k of 50k [1] /usr/mlusr/conf/loop13DTE.d
x 4k of 54k [1] /usr/mlusr/conf/loop31DCE.d
x 4k of 58k [1] /usr/mlusr/conf/loop31DTE.d
x 4k of 62k [1] /usr/mlusr/conf/tscfg.datafile
x 4k of 66k [1] /usr/mlusr/conf/vlink.datafile
x 6k of 72k [1] /usr/mlusr/conf/x25bcf333.2
x 4k of 76k [1] /usr/mlusr/conf/x25hlink.datafi
Restore successful
Configuration changed, restarting link processes.
Configure Link 0 : successful
Configure Link 1 : successful
Configure Link 2 : successful
Enable Link 0 : successful
Enable Link 1 : successful
Enable Link 2 : successful
Link 0 : enabled but down
Link 1 : enabled but down
Link 2 : enabled but down
Link 0 : up
Link 1 : up
Link 2 : up
Application release successful

```

- 9 If, in step 6, you stopped any applications, you are prompted to restart them. Type **y** and press [Return] to restart the applications.
- 10 Unlock the tape drive and remove the cassette tape. Keep this and label it with the date, and store it with all your backup tapes in a safe place in case you need to use it again.
- 11 Perform Procedure 10: Verify the installation.

## Procedure 10: Verify the installation

This procedure assumes that you have

- loaded the operating system (using Procedure 5 or 6)
- rebooted the operating system (using Procedure 7)
- loaded the application tape (using Procedure 8)
- restored the Release 2 configuration files and data files (using Procedure 9)

This procedure verifies that Meridian Link Release 5C and CCR Release 3C have been installed completely and correctly.

- 1 At the “Console Login:” prompt, type **maint** and press [Return].
- 2 You are prompted for a password. Type the password and press [Return]. The default password is **maint**.
- 3 At the “maint>” prompt, type **fileverif** and press [Return].

Messages appear as shown in Figure 256.

**Figure 256**  
**File verification messages**

```
FILE VERIFICATION AS OF 09/20/93 12:13:01
.....
.....
.....
.....
.....
Static file verification found everything to be in order.
.....
.....
.....
.....
.....
Permissions and ownership tests found everything in order.
Structural verification found maint data files to be in order.
```

- 4 Type **exit** and press [Return] to go to the “Console Login:” prompt. Meridian Link and CCR have now been installed and verified.

## Procedure 11: Back up configuration files and data files

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in) and press [Return]. The default password is **maint**.
- 2 Insert the backup tape into the drive.

Ensure that the tape is a backup tape and not a system tape, because any information on the tape will be overwritten by the backup. Ensure that the tape is not write-protected.

**Note:** Ensure you use the correct backup tape. An IPE Module uses a 600-Mbyte tape. An Application Module uses a 155-Mbyte tape.

- 3 At the “maint>” prompt, type **backdata** and press [Return] to start the backup process.

**Figure 257**  
**Backdata messages 1**

```
Files will be backed-up from:
/usr/maint/files/AMprofile
/usr/maint/files/AutoStart
/usr/maint/files/IncrDY
/usr/maint/files/IncrTM
/usr/maint/files/Port
/usr/maint/files/Prefs
/usr/maint/files/Speed
:
:
```

(Actual list of directories may differ depending on the application)

```
Make sure tape is in drive
When ready, enter 'y' to continue, or 'n' to quit: [y,n]
```

- 4 You are prompted to continue the backup process. Wait until the tape LED goes off before typing **y** and pressing Return. Various messages appear; the backup is complete when the message “Backup successful” appears.

**Procedure 11: Back up configuration files and data files (continued)**

**Figure 258**  
**Backdata messages 2**

```
Starting backup
c 4k of 6k [1] /usr/maint/files/AMprofile
c 4k of 10k [1] /usr/maint/files/AutoStart
c 4k of 14k [1] /usr/maint/files/IncrDY
c 4k of 18k [1] /usr/maint/files/IncrTM
c 4k of 22k [1] /usr/maint/files/Port
c 4k of 26k [1] /usr/maint/files/Prefs
c 4k of 30k [1] /usr/maint/files/Speed
.
.
.
Backup successful
maint>
```

- 5 At the “maint>” prompt, type **exit** and press [Return] to log out of maint.
- 6 Unlock the tape drive and remove the cassette tape. Keep this and all your backup tapes in a safe place in case you need to use them again.





---

## Chapter 15: Link configuration

---

This chapter describes the initial configuration procedures for the links used by the applications, and refers to the procedures in Chapter 14, “Software installation, upgrade, and update procedures” earlier in this guide.

*Note:* The redundancy feature does not affect link configurations as described in this chapter.

### Default configuration

Systems shipped from the factory are configured as described in the following sections. The default configuration for link 0 applies to Meridian Link, CCR, and co-resident systems. Configurations for link 1 and link 2 are for Meridian Link and co-resident systems only.

### Link 0—Application Module Link

Link 0 is defined as the Application Module Link (AML), with the following characteristics (which are described in more detail later in this chapter):

Protocol: HDLC	Link type: 1
Machine ID: SL16	
Delay: 0	
Port type: H	Physical DTE(0)/DCE(1): 0
PDN type: 0	Maximum Frame length: 135
Baud rate: 19200	Fail timer: 50
RFS timer: 150	Internal address: 1
Remote address: 3	T1: 20
Maximum out frames (K): 7	Maximum trans attempts: (N2): 8

## Link 1—X.25 protocol (Meridian Link)

Link 1 is defined as the host link using the X.25 protocol if services 97, 98, 100, or 101 are equipped with the following characteristics (which are described in more detail later in this chapter):

Protocol: X25	Link type: 2
Machine ID: x25dest	
Delay: 0	
Port type: X	Physical DTE(0)/DCE(1): 1
PDN type: 44	Maximum Frame length: 135
Baud rate: 19200	Fail timer: 150
RFS timer: 150	Internal address: 1
Remote address: 3	T1: 30
Maximum out frames (K): 7	Maximum trans attempts (N2): 7
Local DTE address: 000000990100	
Flow control negotiation: 0	Incoming packet size: 128
Outgoing packet size: 128	Incoming window size: 2
Outgoing window size: 2	Throughput negotiation used: 0
Incoming throughput class: 10	Outgoing throughput class: 10
Lowest LCN for DTE/DCE: -1	Highest LCN for DTE/DCE: -1
Lowest LCN: 1	Highest LCN: 4095
LOC LIC: -1	HOC HIC: -1
T10: 1800	
T11: 2000	T12: 1800
T13: 1800	T14: 600
T15: 1500	T16: 1300
Maximum T12 retries: 3	Maximum T13 retries: 3

If your Meridian Link application requirements are satisfied by the default configuration, no more procedures are required. You may choose to verify the status of the link using Procedure 12: Verifying the link status, in this chapter.



## Changing your configuration

Use the following procedures (as your requirements dictate) to verify or reconfigure application software:

- Procedure 12: Verifying the link status
- Procedure 13: Changing AML (link 0) parameters
- Procedure 14: Changing Meridian Link (link 1) parameters
- Procedure 15: Changing Meridian Mail Link (link 2) parameters
- Procedure 16: Replacing the default configuration file
- Procedure 17: Creating a new configuration file

## Procedure 12: Verifying the link status

- 1 Log in as **mlusr** (if you are not already logged in). The default password is **mlusr**.
- 2 Type **status link 0** and press [Return] to verify the status of the link to Meridian 1.

The response “Link 0: Up” indicates that the link is functioning properly. If you receive a different response, refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (NTP 553-3211-510).
- 3 **Meridian Link only**

Type **status link 1** and press [Return] to verify the status of the link to the host computer.

The response “Link 1: Up” indicates that the link is functioning properly. This message appears only if a host application is connected. If you receive a different response, refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (NTP 553-3211-510).
- 4 **Meridian Link only**

Type **status link 2** and press [Return] to verify the status of the link to the host computer.

The response “Link 2: Up” indicates that the link is functioning properly. This message appears only if a host application is connected. If you receive a different response, refer to the Application Module and Intelligent Peripheral Equipment Module Diagnostic and Maintenance Guide (NTP 553-3211-510).

### Procedure 13: Changing AML (link 0) parameters

Meridian Link and CCR are shipped with a default configuration for the AML. If the default configuration is not appropriate for your system, you can use this procedure to change it. Note that you cannot change the values for the protocol, link type, and port type parameters. For more information about AML parameters, refer to Table 141 at the end of this procedure.



#### CAUTION

##### Risk of potential data loss

Do not use the change link command without the direction of Nortel support personnel or host computer support personnel.

- 1 Log in as **mlusr** (if you are not already logged in). The default password is **mlusr**.
- 2 At the “mlusr>” prompt, type **display link 0** and press [Return] to see the current configuration for the link to the Meridian 1 system.

The default link configuration appears, as shown below.

**Figure 259**  
**Link 0 parameters**

```
Protocol: HDLC                      Link type: 1
Machine ID: SL16
Delay: 0
Port type: H                        Physical DTE(0)/DCE(1): 0
PDN type: 0                          Maximum Frame length: 135
Baud rate: 19200                     Fail timer: 50
RFS timer: 150                       Internal address: 1
Remote address: 3                    T1: 20
Maximum out frames (K): 7            Maximum trans attempts: (N2): 8

mlusr>
```

**Procedure 13: Changing AML (link 0) parameters (continued)**

- 3 Type **change link 0** and press [Return] to begin making changes to the link.

The first parameter appears, along with possible and current values.

**Note:** All the fields displayed in Figure 260 except for “Link type” and “Port type” may be changed by executing the “change link x” command.

**Figure 260**  
**Change link parameters**

```
Machine ID
Current    SL16
>
```

- 4 To change the parameter, type the new value and press [Return]. To leave the parameter unchanged, just press [Return].  
Refer to Table 141 for information on link parameters.
- 5 Continue with remaining parameters until the “Confirm (yes or no)” prompt appears.
- 6 To confirm the changes, type **yes** and press [Return].  
If you made a mistake and wish to redo your changes, type **no**, press [Return], and restart this procedure from step 3.  
At this point, the changes you have made are temporary. They are saved in memory, but not on disk (which means that if the system is restarted, the changes are lost).
- 7 To save your changes, go to the appropriate procedure:
- Procedure 16: Replacing the default configuration file
  - Procedure 17: Creating a configuration file

**Procedure 13: Changing AML (link 0) parameters (continued)**

**Table 141**  
**AML (link 0) parameters**

Link parameter	Allowed values (defaults in parentheses)	Description
Protocol*	(HDLC)	Link protocol used
Link type*	(1)	Type of link (1=AML)
Machine ID	(SL16)	Logical name assigned to the attached Meridian 1
Delay	(0)–9999	Maximum time (in seconds) between packet transmissions
Port type*	(H)	H=HDLC
Physical DTE/DCE	0, 1	0 if link port is configured as DTE; 1 if the port is configured as DCE
PDN type	0, 40–48	<p>Packet data network type. This parameter is dependent on the type of network configured. The possible values are:</p> <ul style="list-style-type: none"> <li>0 — LAPB</li> <li>40 — Datex-P (Germany)</li> <li>41 — Transpac (France)</li> <li>42 — PPS (United Kingdom)</li> <li>43 — Datapak (Sweden)</li> <li>44 — Telenet (USA)</li> <li>45 — DDN (USA)</li> <li>46 — Accunet (USA)</li> <li>47 — Datapac (Canada)</li> <li>48 — Tymnet (USA)</li> </ul> <p>The default values are 0 for LAPB and 44 for X.25.</p>
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		
— continued —		



**Procedure 13: Changing AML (link 0) parameters (continued)****Table 141**  
**AML (link 0) parameters (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
Maximum Frame Length	(135)	
Baud rate	300 600 1200 2400 4800 9600 (19200) 38400 48000 56000 64000	Must be identical to that specified on the Meridian 1 or host computer configuration; if modems are used, must also match baud rate of the modem
Fail timer	0–(50)–9999	Timer value (in 1/10 second increments) for monitoring the signals that indicate link failure
RFS timer	0–(150)–9999	Timer value (in 1/10 second increments) for monitoring CTS or DTR signals after line opening
Internal address	(1), 3	1 for DCE; 3 for DTE
Remote address	1, (3)	3 for DCE; 1 for DTE. (This value must be different from the value of the internal address. The combination of values for internal address and remote address must be the opposite of the values for the host. That is, if the values for the host are 3, 1, the values for the link must be 1, 3.)
T1	0–(20)–9999	Frame recovery time (in 1/10 second increments); must be identical to the time specified on the host computer configuration
<b>— continued —</b>		

**Procedure 13: Changing AML (link 0) parameters (continued)****Table 141**  
**AML (link 0) parameters (continued)**

<b>Link parameter</b>	<b>Allowed values (defaults in parentheses)</b>	<b>Description</b>
Maximum out frames (K)	1–(7)	LAPB window size; must be identical to the size specified on the host computer configuration
Maximum trans attempts (N2)	1–(8)–9999	Maximum number of retries to complete a transmission; must be identical to the number specified on the Meridian 1 configuration
– end –		

## Procedure 14: Changing Meridian Link (link 1) parameters (Meridian Link only)

Meridian Link is shipped with a default configuration for the Host Link. To make changes to the configuration file, use this procedure. Note that you cannot change the values for some parameters. X.25 and LAPB parameters are detailed in Table 142, TCP/IP parameters in Table 143.



### CAUTION

#### Risk of potential data loss

Do not use the change link command without the direction of Nortel support personnel or host computer support personnel.

- 1 Log in as **mlusr**. The default password is **mlusr**.
- 2 At the “mlusr>” prompt, type **display link 1** and press [Return] to see the current configuration for the link to the host computer.  
The default link configuration is displayed, as shown under the “Default configuration” section earlier in this chapter.
- 3 Type **change link 1** and press [Return] to begin making changes.  
The first parameter appears, along with the current value.
- 4 Either type a new value for the parameter and press [Return] or just press [Return] to leave the current value unchanged.  
Refer to Table 142 or Table 143 for information on link parameters.
- 5 Continue changing parameters until the “Confirm (yes or no)” prompt appears.
- 6 To confirm the changes, type **yes** and press [Return]. If you made a mistake and wish to redo your changes, type **no**, press [Return], and restart this procedure from step 3.  
At this point, the changes you have made are saved in memory, but not on disk (if the system is restarted, the changes are lost).
- 7 To save your changes, go to the appropriate procedure:
  - Procedure 16: Replacing the default configuration file
  - Procedure 17: Creating a configuration file

**Procedure 14: Changing Meridian Link (link 1) parameters (continued)**

**Table 142**  
**X.25 and LAPB parameters—Link 1**

Link parameter	Allowed values (defaults in parentheses)	Description
<b>X.25, LAPB parameters</b>		
Protocol*	X25, HDLC	Link protocol used
Link type*	2	Type of link (2 = Host Link)
Machine ID	x25dest, hdlcdest	Logical name assigned to the attached host
Delay	(0)–9999	Maximum time (in seconds) between packet transmissions
Port type*	X, H	X = X.25, H = HDLC
Physical DTE/DCE	0, 1	0 if link port is configured as DTE; 1 if the port is configured as DCE
PDN type	0, 40–48	Packet data network type. This parameter is dependent on the type of X.25 network configured on the host. Possible values are: 0 — LAPB 40 — Datex-P (Germany) 41 — Transpac (France) 42 — PPS (United Kingdom) 43 — Datapak (Sweden) 44 — Telenet (USA) 45 — DDN (USA) 46 — Accunet (USA) 47 — Datapac (Canada) 48 — Tymnet (USA) The default values are 0 for LAPB and 44 for X.25.
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		
— continued —		

**Procedure 14: Changing Meridian Link (link 1) parameters (continued)**

**Table 142**  
**X.25 and LAPB parameters—Link 1 (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
Maximum Frame Length*	135	
Baud rate	300 600 1200 2400 4800 9600 (19200) 38400 48000 56000 64000	Must be same as baud rate on the Meridian 1 or host computer configuration; if modems are used, must also match baud rate of the modem
Fail timer	0-(50)-9999	Timer value (in 1/10 second increments) for monitoring the signals that indicate link failure
RFS timer	0-(150)-9999	Timer value (in 1/10 second increments) for monitoring CTS or DTR signals after line opening
Internal address	(1), 3	1 for DCE; 3 for DTE
Remote address	1, (3)	3 for DCE; 1 for DTE. (This value must be different from the value of the internal address. The combination of values for internal address and remote address must be the opposite of the values for the host. That is, if the values for the host are 3, 1, the values for the link must be 1, 3.)
T1	0-(20)-9999	Frame recovery time (in 1/10 second increments); must be identical to the time specified on the host computer configuration
Maximum out frames (K)	1-(7)	LAPB window size; must be identical to the size specified on the host computer configuration
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		
— continued —		

**Procedure 14: Changing Meridian Link (link 1) parameters (continued)****Table 142**  
**X.25 and LAPB parameters—Link 1 (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
Maximum trans attempts (N2)	1–(8)–9999	Maximum number of retries to complete a transmission; must be identical to the number specified on the host computer configuration
Local DTE address	000000990100	X.25 “call request” address that identifies the AM. When the host sends the X.25 call request packet to set up the SVC, it must specify the AM’s local DTE address. The default value is 000000990100.
<b>X.25-only parameters:</b> Flow control negotiation	(0)–1	An X.25 service that allows flow control parameters (packet size and window size) to be negotiated between the host and the AM. Not supported by the AM. Default value is 0 (no flow control negotiation). Use flow control negotiation (packet size and window size) 0 = no; 1 = yes.
Incoming packet size	16 32 64 (128) 256 512 1024 2048 4096	Maximum X.25 packet size; must be identical to the size specified on the host computer configuration
Outgoing packet size	16 32 64 (128) 256 512 1024 2048 4096	Maximum X.25 packet size; must be identical to the size specified on the host computer configuration
<b>— continued —</b>		

**Procedure 14: Changing Meridian Link (link 1) parameters (continued)****Table 142**  
**X.25 and LAPB parameters—Link 1 (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
Incoming window size	1–(2)–7	Maximum number of outstanding incoming packets without an acknowledgment
Outgoing window size	1–(2)–7	Maximum number of outstanding outgoing packets without an acknowledgment
Throughput negotiation used	(0)–1	Specify whether throughput negotiation may be used: 0 = no; 1 = yes
Incoming throughput class	3–(10)–12	Maximum amount of incoming information on a connection basis, meaningful only if Throughput Negotiation Used is set to yes.
Outgoing throughput class	3–(10)–12	Maximum amount of outgoing information on a connection basis, meaningful only if Throughput Negotiation Used is set to yes.
Lowest LCN for DTE/DCE*	(-1)	Specifies the lowest X.25 virtual circuit number that will be assigned for an incoming (if DTE) or outgoing (if DCE) X.25 call request. Not used by the AM. Default value is –1.
Highest LCN for DTE/DCE*	(-1)	Specifies the highest X.25 virtual circuit number that will be assigned for an incoming (if DTE) or outgoing (if DCE) X.25 call request. Not used by the AM. Default value is –1.
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		
– continued –		

**Procedure 14: Changing Meridian Link (link 1) parameters (continued)**

**Table 142**  
**X.25 and LAPB parameters—Link 1 (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
Lowest LCN*	(1)	Specifies the lowest X.25 virtual circuit number that will be assigned for an incoming or outgoing X.25 call request. Default value is 1.
Highest LCN*	(4095)	Specifies the highest X.25 virtual circuit number that will be assigned for an incoming or outgoing X.25 call request. Default value is 4095.
LOC LIC*	(-1)	Specifies the lowest X.25 virtual circuit number that will be assigned for an incoming (if DCE) or outgoing (if DTE) X.25 call request. Not used by the AM. Default value is -1.
HOC HIC*	(-1)	Specifies the highest X.25 virtual circuit number that will be assigned for an incoming (if DCE) or outgoing (if DTE) X.25 call request. Not used by the AM. Default value is -1.
T10	0-(1800)-9999	Amount of time (in 1/10 second increments) the AM will wait for an X.25 restart confirmation packet after sending an X.25 restart packet to the host.
T11	0-(2000)-9999	Amount of time (in 1/10 second increments) the host will wait for an X.25 call accept packet after sending an X.25 call request packet to the AM.
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		
— continued —		



**Procedure 14: Changing Meridian Link (link 1) parameters (continued)****Table 142**  
**X.25 and LAPB parameters—Link 1 (continued)**

Link parameter	Allowed values (defaults in parentheses)	Description
T12	0–(1800)–9999	Amount of time (in 1/10 second increments) the AM will wait for an X.25 reset confirmation packet after sending an X.25 reset request packet to the host.
T13	0–(1800)–9999	Amount of time (in 1/10 second increments) the AM will wait for an X.25 clear confirmation packet after sending an X.25 clear request packet to the host.
T14	0–(600)–9999	Amount of time (in 1/10 second increments) the AM will wait for a packet with any P(R) value after sending an X.25 data packet to the host.
T15	0–(1500)–9999	Amount of time (in 1/10 second increments) the AM will wait for a packet with a P(R) value that acknowledges a transmitted X.25 data packet to the host.
T16	0–(1300)–9999	Amount of time (in 1/10 second increments) the AM will wait for an X.25 interrupt confirmation packet after sending an X.25 interrupt request packet to the host.
Maximum T12 retries	0–(3)–9999	Maximum number of times the AM sends reset requests due to T12 time outs.
Maximum T13 retries	0–(3)–9999	Maximum number of times the MLM sends clear requests due to T13 time outs.
<b>— end —</b>		

**Table 143**  
**TCP/IP parameters—Link 1**

Link parameter	Allowed values (defaults in parentheses)	Description
<b>TCP/IP parameters</b>		
Protocol*	LAN	Link protocol used
Link type*	2	Type of link (2 = Host Link)
Machine ID	Lanlink	Logical name assigned to the attached host (case-sensitive)
Delay	(0)–9999	Maximum time (in seconds) between packet transmissions
Port	3000	Port number used for listen socket.
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		

## Procedure 15: Changing Meridian Mail Link (link 2) parameters (Meridian Link only)

Meridian Link is shipped with a default configuration for the Meridian Mail Link. If the default configuration is not appropriate, you can use this procedure to change it. Note that you cannot change the values for the protocol and link type parameters. For more information, refer to Table 144 at the end of this procedure.



### CAUTION

#### Risk of potential data loss

Do not use the change link command without the direction of Nortel support personnel or host computer support personnel.

- 1 Log in as **mlusr** (if you are not already logged in). The default password is **mlusr**.
- 2 At the “mlusr>” prompt, type **display link 2** and press [Return] to see the current configuration for the link to the host computer.  
The default link configuration is displayed, as shown in Table 144.
- 3 Type **change link 2** and press [Return] to begin making changes to the link.  
The first parameter appears, along with possible and current values.
- 4 Either type a new value for the parameter and press [Return] or just press [Return] to leave the current value unchanged.  
Refer to Table 144 for information on link parameters for the MML.
- 5 Continue changing parameters until the “Confirm (yes or no)” prompt appears.
- 6 To confirm the changes, type **yes** and press [Return].  
If you made a mistake and wish to redo your changes, type **no**, press [Return], and restart this procedure from step 3.  
At this point, the changes you have made are temporary. They are saved in memory, but not on disk (which means that if the system is restarted, the changes are lost).

**Procedure 15: Changing Meridian Mail Link (link 2) parameters  
(continued)**

- 7 To save your changes, go to the appropriate procedure:
- Procedure 16: Replacing the default configuration file
  - Procedure 17: Creating a configuration file

**Table 144**  
**Link parameters—Link 2**

Link parameter	Allowed values (defaults in parentheses)	Description
Protocol*	ASYNC	Link protocol used
Link type*	3	Type of link (1 = AML link, 2 = host link, 3 = Meridian Mail Link)
Machine ID	Meridian Mail	Logical name assigned to the Meridian Mail system
Delay	0	Maximum time (in seconds) between packet transmissions
Port number	tty03	The port used for Meridian Mail Link
<b>Note:</b> Parameters marked with an asterisk (*) cannot be changed.		

## Procedure 16: Replacing the default configuration file

Meridian Link and CCR are shipped with a default link configuration. The default configuration is shipped in the following file or files:

- AML (link 0): /usr/mlusr/conf/hdlcmlnk.datafile
- Host Link (link 1): /usr/mlusr/conf/x25hlnk.datafile (Meridian Link only)
- MML (link 2): /usr/mlusr/conf/vlink.datafile (Meridian Link only)

If you have changed the default parameters in Procedure 13, 14, or 15, you can do one of the following:

- Use this procedure to replace the default configuration with the changed configuration.
  - Use Procedure 17 to store the changed configuration in another file.
- 1 Use Procedure 13, 14, or 15 to change the configuration parameters.
  - 2 At the “mlusr>” prompt, type **save link x** (where x is the link number) and press [Return].

The following messages appear, in which “filename” represents the name of the default configuration file.

**Figure 261**  
**Save link parameters**

```
File "filename" already exists. OK to overwrite?
Confirm? (yes or no):
```

- 3 Type **yes** and press [Return] to confirm that you wish to overwrite the file.

Your changes have now been saved on the hard disk.

## Procedure 17: Creating a configuration file

Meridian Link and CCR are shipped with a default link configuration for the links. The default configuration is shipped in the following file or files:

- AML (link 0): /usr/mlusr/conf/hdlcmlnk.datafile
- Host Link (link 1): /usr/mlusr/conf/x25hlnk.datafile (Meridian Link only)
- MML (link 2): /usr/mlusr/conf/vlink.datafile (Meridian Link only)

If you have changed the default configuration in Procedure 13, 14, or 15, you can do one of the following:

- Use this procedure to store the changed configuration in another file, so preserving the default configuration.
- Use Procedure 15 to replace the default configuration.

1 Use Procedure 13, 14, or 15 to change configuration parameters.

2 At the “mlusr>” prompt, type **save link x filename** (where x is the link number and filename is a file name that you choose), and press [Return].

Figure 262 is an example of saving parameters for link number 0 in a file called “savedata.” The configuration file must be located in the /usr/mlusr/conf directory.

**Figure 262**  
**Save link file**

```
mlusr> save link 0 savedata  
  
mlusr>
```

The changes have now been saved in a new configuration file.

3 At the “mlusr>” prompt, type **change linkctl** and press [Return] to change the link control file.

This file contains link control information, which includes the name of the configuration file that defines the link parameters.

**Procedure 17: Creating a configuration file (continued)**

- 4 The process is shown in Figure 263. At each “Entry>” prompt, type your responses as indicated in bold type. Where you see “<cr>,” just press [Return].

**Note:** Figure 263 is illustrative only. It shows the process for Meridian Link or co-resident systems. References to link 1 and link 2 will not be present for CCR-only systems.

Replace the word “filename” with the name of the file you chose in step 2.

**Procedure 17: Creating a configuration file (continued)****Figure 263**  
**Change linkctl**

```

mlusr> change linkctl

Current Control File Image
0      HDLC      /usr/mlusr/conf/hdlcmlnk.datafile
1      X25      /usr/mlusr/conf/x25hlnk.datafile
2      ASYNC    /usr/mlusr/conf/vlink.datafile

Current Entry > 0      HDLC      /usr/mlusr/conf/hdlcmlnk.datafile
Type : "delete" to remove
       "<ret>" to keep as is,
       "<link number> <link type> <file name>" to change

Entry > <CR>

Current Entry > 1      X25      /usr/mlusr/conf/x25hlnk.datafile
Type : "delete" to remove
       "<ret>" to keep as is,
       "<link number> <link type> <file name>" to change

Entry > 1 X25      /usr/mlusr/conf/filename.datafile <CR>

Note: When typing the information, the entries HDLC, X25 and ASYNC
must be in uppercase and the pathname of the file must be in all
lowercase. The number of spaces between each parameter doesn't
matter. Do not type any control characters or escape sequences.

New Entry
Type : "<ret>" end changes
       "<link number> <link type> <file name>" add entry

Current Entry > 2      ASYNC    /usr/mlusr/conf/vlink.datafile
Type : "delete" to remove
       "<ret>" to keep as is,
       "<link number> <link type> <file name>" to change

Entry> <CR>

New Control File Image:
0      HDLC      /usr/mlusr/conf/hdlcmlnk.datafile
1      X25      /usr/mlusr/conf/filename.datafile
2      ASYNC    /usr/mlusr/conf/vlink.datafile
Confirm? (yes or no):

```

- 5** Type **yes** and press [Return] to confirm that you wish to save your changes to the link control file.

Any time the system is restarted, the link parameters will be read from your configuration file.



---

## Chapter 16: Additional application configuration

---

In addition to configuring the links, you may need to perform other procedures to configure the application or applications.

The Meridian Link application is shipped from the factory configured so that the application starts automatically (auto-start) whenever the IPE Module or Application Module is restarted.

The CCR application is shipped from the factory configured in the following manner:

- The Meridian 1 customer number is configured according to information given at ordering time.
- No regular backups are scheduled.
- CCR starts automatically (auto-start) whenever the IPE Module or Application Module is restarted.
- English is the default system language, French is the default secondary language.
- All terminal/printer ports are off; that is, configured for printers at 9600 baud.
- No printers are defined.

For CCR-only or co-resident systems, you may need to do the following:

- perform Procedure 18: Turn off auto-start
- perform Procedure 19: Change the Meridian 1 customer number

- perform Procedure 20: Schedule regular backups
- perform Procedure 21: Change the default system languages
- perform Procedure 22: Configure terminal ports
- perform Procedure 23: Configure printer ports

This chapter describes the procedures for changing these default characteristics.

## Procedure 18: Turn off auto-start

Meridian Link and CCR are configured by default to restart automatically any time the system is powered down and up again (for example, in the event of an unscheduled power outage). If you wish to start the CCR application manually every time the IPE Module or Application Module is rebooted, follow this procedure to turn off auto-start.

*Note:* This does not affect Meridian Link.

- 1 Log in as **maint**. The default password is **maint**.
- 2 At the “maint>” prompt, type **bootconfig** and press [Return].

The following prompt appears:

**Figure 264**  
**Bootconfig prompt**

```
Application is configured to start when the system boots
Do you want to disable starting the application? [y,n]
```

- 3 Type **y** and press [Return] to turn off auto-start.  
The “Auto start disabled” prompt confirms your change.

**Figure 265**  
**Auto-start disabled message**

```
Auto start disabled
maint>
```

## Procedure 19: Change the Meridian 1 customer number

When you order CCR, you specify the customer number for the Meridian 1 system to which the CCR Module or IPE Module will be connected. CCR is thus shipped with the customer number configured. If you want to change the customer number (for example, if you connect the CCR Module or IPE Module to a Meridian 1 system with a different customer number), use this procedure.

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in). The default password is **maint**.
- 2 At the “maint>” prompt, type **applconfig** and press [Return].

The following messages appear:

**Figure 266**  
**Customer number prompts**

```
Enter a new value to change the following application parameter:  
  
Enter Customer Number value as: 0-99  
Enter a return for no change  
Change 'MSL-1 Customer Number' from '1' to:
```

- 3 The range of possible values (0–99) and the current value are displayed. Type the new customer number and press [Return]. The following message appears.

**Figure 267**  
**Commit prompt**

```
Do you want to commit this new value? [y,n]
```

- 4 Type **y** and press [Return] to confirm that you will use the new customer number.

## Procedure 20: Schedule regular backups

For security reasons, you should back up regularly. Use this procedure to schedule regular backups or to change the schedule. You should try to schedule backups for off-peak hours (such as during the night).

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in). The default password is **maint**.
- 2 At the “maint>” prompt, type **backconfig** and press [Return].

The following prompt appears:

**Figure 268**  
**Backup schedule prompt**

```
A backup has not been scheduled.  
Do you want to schedule a backup [y,n]:
```

- 3 Type **y** and press [Return] to indicate that you wish to schedule a backup.

You are prompted to change the scheduled backup.

**Figure 269**  
**Backup time prompts**

```
Enter time in 24-hour form: 00:00–23:59  
Enter return for no change  
Change scheduling time from '02:00' to:
```

- 4 To change the scheduled backup time, type a new time in the form 00:00–23:59 and press [Return]. To indicate that you do not wish to change the default scheduling time, just press [Return].

## Procedure 20: Schedule regular backups (continued)

### Figure 270 Backup day prompts

```
Enter day in the form: SUN=Sunday, MON=Monday, ..., ALL=all
Enter a return for no change
Change scheduling day from 'SUN' to:
```

- 5 To change the scheduled backup day, type a new day (in the form SUN for Sunday, MON for Monday, etc., or ALL to specify daily backup) and press [Return]. To indicate that you do not wish to change the scheduled backup day, just press [Return].

### Figure 271 Reoccurring backup prompt

```
Should tape backup be reoccurring? [y,n]:
```

- 6 You are prompted to indicate whether the backup should reoccur (that is, either everyday or once a week on the day you specified). If you wish the backup to occur regularly, type **y** and press [Return]. If you wish to schedule a single backup only, type **n** and press [Return].

The following prompt appears:

### Figure 272 Backup tape notice

```
ATTENTION: Make sure a tape is in the drive prior to scheduled backup time
maint>
```

- 7 Ensure that you have a backup tape in the tape drive before the specified time, and not a system tape with software on it. Ensure that the backup tape is NOT write-protected.

## Procedure 21: Change the default system languages

CCR enables you to display text on your screen in one language or two. Use this procedure to define or change the languages displayed. For example, if the prompts on your screen are in English, you can use this procedure to change them to French, if you prefer.

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in). The default password is **maint**.
- 2 At the “maint>” prompt, type **langconfig** and press [Return].  
The system displays your language options.

**Figure 273**  
**Langconfig options prompt**

```
Your pre-configured login languages are:
Default:      English
Secondary:    None

Would you like to configure new language options?
```

- 3 Type **y** and press [Return] to confirm that you want to change the language configuration.  
  
If you do not wish to make changes, type **n** and press [Return]. This returns you to the “maint>” prompt.

**Figure 274**  
**Default language prompt**

```
System language options:
 1. English
 2. French

Please select the CCR default language. Select a number or
press <Return> for default (English):
```

- 4 The system again displays your language options (each one numbered) and prompts you to select the default language. Type the number corresponding to the language you wish to use as the default language and press [Return].

**Procedure 21: Change the default system languages (continued)**

**Figure 275**  
**Secondary language prompt**

```
System language options:
    1. English
    2. French
    3. None

Please select the secondary language for the Login Screen. Select
a number or press <Return> for default (French). Choosing None
will result in a single language system:
```

- 5 The system again displays your language options and prompts you to select the secondary language. To select a secondary language, type the number corresponding to the language you wish to use as the secondary language and press [Return]. To indicate that you wish a single-language system, just press [Return].

**Figure 276**  
**Language options confirmation prompt**

```
Your login language selections are:
Default:      English
Secondary:    French
Is this selection correct? (y,n):
```

- 6 The system displays your language selections and prompts you to confirm that they are correct. Type **y** and press [Return] to indicate that your selections are correct.
- All future application logins will reflect these language choices.



## Procedure 22: Configure terminal ports

CCR supports eight ports, each of which can be configured for a terminal or a printer. Use this procedure to configure a port for a terminal.

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in). The default password is **maint**.
- 2 At the “maint>” prompt, type **portconfig** and press [Return].  
The port configuration menu appears.

**Figure 277**  
**Port configuration menu**

```
CCR Port Configuration Utility
1: List Port Characteristics.
2: Change Port Characteristics.
Enter the number of the function you want to perform.
    (Hit the <RETURN> key to EXIT)
```

- 3 Type **2** and press [Return] to change port characteristics.

**Figure 278**  
**Port number prompt**

```
Enter PORT number (7 or 8):
```

- 4 You are prompted to enter the port number. Type the number corresponding to the port you wish to change and press [Return].

**Note:** The number of ports displayed in Figure 278 depends on the number of ports available. The example shown is for an IPE Module with co-resident CCR and Meridian Link.

### Procedure 22: Configuring terminal ports (continued)

**Figure 279**  
**Port state prompt**

```
Available states:
  off (printer)   on (terminal)
Select a state (default: "off"):
```

- 5 You are prompted to select a state ("off" selects a printer; "on" selects a terminal). To configure the port as a terminal, type **on** and press [Return].

**Figure 280**  
**Baud rate prompt**

```
Available BAUD Rates:
  1200      2400      9600
Select a BAUD rate (default: 9600):
```

- 6 You are prompted to select a baud rate. Press [Return] to leave the baud rate unchanged.

**Figure 281**  
**Port configuration confirmation**

```
STATE = on
BAUD = 9600

Do you want to install these new characteristics (y/n)?
```

- 7 You are prompted on whether you want to install these new characteristics. Type **y** and press [Return] to indicate that you wish to apply your changes.

## Procedure 23: Configure printer ports

CCR supports eight ports, each of which can be configured for a terminal or a printer. Use this procedure to configure a port for a printer.

- 1 At the “Console Login:” prompt, type **maint** (if you are not already logged in). The default password is **maint**.
- 2 At the “maint>” prompt, type **portconfig** and press [Return].  
The port configuration menu appears.

**Figure 282**  
**Port configuration menu**

```
CCR Port Configuration Utility
1: List Port Characteristics.
2: Change Port Characteristics.
Enter the number of the function you want to perform.
    (Hit the <RETURN> key to EXIT)
```

- 3 Type **2** and press [Return] to change port characteristics.

**Figure 283**  
**Port number prompt**

```
Enter PORT number (7 or 8):
```

- 4 You are prompted to enter the port number. Type the number corresponding to the port you wish to change and press [Return].

**Note:** The number of ports displayed in Figure 283 depends on the number available. The example shown is for an IPE Module with co-resident CCR and Meridian Link.

### Procedure 23: Configuring printer ports (continued)

**Figure 284**  
**Port state prompt**

```
Available states:
  off (printer)   on (terminal)
Select a state (default: "off"):
```

- 5 You are prompted to select a state (“off” selects a printer; “on” selects a terminal). To configure the port as a printer, type **off** and press [Return].

**Figure 285**  
**Baud rate prompt**

```
Available BAUD Rates:
  1200      2400      9600
Select a BAUD rate (default: 9600):
```

- 6 You are prompted to select a baud rate. Press [Return] to leave the baud rate unchanged.

**Figure 286**  
**Port configuration confirmation**

```
STATE = off
BAUD = 9600

Do you want to install these new characteristics (y/n)?
```

- 7 You are prompted on whether you want to install these new characteristics. Type **y** and press [Return] to indicate that you wish to apply your changes.  
The portconfig command executes and you return to the “maint>” prompt.
- 8 At the “maint>” prompt, type **printconfig** and press [Return].  
The printer configuration menu appears.

**Procedure 23: Configuring printer ports (continued)**

**Figure 287**  
**Printer configuration prompt menu**

```
CCR Line Printer Configuration Utility
1: Add a printer.
2: Delete a printer.
3: List of configured printers.
4: Status of configured printers.
5: Enable a configured printer.
6: Disable a configured printer.
7: List/Delete printer job.

Enter the number of the function you want to perform.
(Hit the <RETURN> key to EXIT)
```

- 9** Type **1** and press [Return] to add a printer.  
You are prompted to enter the printer name.

**Figure 288**  
**Printer name prompt**

```
CCR ADD Printer Operation
Enter printer name:
```

- 10** Type the name you wish to use to refer to the printer and press [Return].  
The name can be up to 14 characters in length and should not include any spaces.  
You are prompted to enter the port number.

**Figure 289**  
**Port number prompt**

```
Enter PORT number (7 - 8):
```

**Note:** The number of ports displayed in Figure 289 depends on the number available. The example shown is for an IPE Module with co-resident CCR and Meridian Link.

**Procedure 23: Configuring printer ports (continued)**

- 11 Type the number corresponding to the port and press [Return].  
A list of printer models appears.

**Figure 290  
Printer model menu**

```
Select a Model number from the list provided below:
1.  HP Rugged Writer.
2.  HP LaserJet II, III, IV or DeskJet.
3.  Other (dumb).

Enter the number of the desired printer type here:
```

- 12 Type the number corresponding to the printer model from the list and press [Return].  
The following messages appear:

**Figure 291  
Printer enabled message**

```
Line printer scheduler stopped
destination "Printer1" now accepting requests
printer "Printer1" now enabled

(Hit the <RETURN> key when finished)
```

The printer is now configured and is ready to use. Repeat this procedure for any other printers you wish to configure.

---

## Chapter 17: Hardware upgrade

---

This chapter provides procedures to enable you to

- upgrade an Application Module SBC from an MVME147 card to an MVME167 card
- upgrade an Option 11 IPE Module to an Options 21–81 IPE Module

### **To upgrade an Application Module SBC card from an MVME147 card to an MVME167 card**

- perform Procedure 24: Software powerdown
- perform Procedure 25: Hardware powerdown
- perform Procedure 26: Upgrading the Application Module from an MVME147 card to an MVME167 card

### **To upgrade an Option 11 IPE Module to an Options 21–81 IPE Module**

- perform Procedure 27: Upgrading an IPE Module from Option 11 to an Options 21–81 IPE Module

## Procedure 24: Software powerdown

- 1 Log in as **maint**. The default password is **maint**.
- 2 At the “maint>” prompt, type **powerdown** and press [Return].

The following messages appear:

**Figure 292**  
**Powerdown messages 1**

```
Would you like to power down or reboot?  
Powering down allows you to turn the system off.  
Rebooting will automatically restart the system.  
Enter p to power down, r to reboot, or q to quit:
```

- 3 Type **p** and press [Return] to confirm that you wish to power down.

The following messages appear:

**Figure 293**  
**Powerdown messages 2**

```
Running subcommand 'powerdown' from menu 'machinemgmt',  
MACHINE MANAGEMENT
```

*Note:* If more than one user is logged in to the system, a list of the logged-in users will appear on the screen.

```
Users currently logged in:  
disttech console Oct 26 13:38  
root tty01 Oct 25 21:20  
Once started, a powerdown CANNOT BE STOPPED.  
Do you want to start an express powerdown? [y, n, ?, q]
```

- 4 A list of logged-in users appears. You are prompted to start an express powerdown. Type **y** and press [Return].  
If you wish to alert all users currently logged in to the system of the powerdown, type **n** and press [Return]. If you do, you are prompted to enter the number of seconds the system should wait after the warning message. Type the number of seconds that will allow the users to save their work and log off. Then press [Return].

The messages shown in Figure 294 appear on the screen.



## Procedure 24: Software powerdown (continued)

**Figure 294**  
**Shutdown message screen**

```
Shutdown started.    Mon Sep 20 12:17:20 PDT 1993

Broadcast Message from root (console) on sysV68 Mon Sep 20 12:17:21...
THE SYSTEM IS BEING SHUT DOWN NOW !!!
Log off now or risk your files being damaged.

INIT: New run level: 0
The system is coming down.  Please wait.
System services are now being stopped.
Terminating Applications
/usr/bin/maint: /dev/tty: cannot create
cron aborted: SIGTERM

The system is down.

NOTICE: System Halt Requested (0)

NOTICE: System secured for powering down.
```

## **Procedure 25: Hardware powerdown**

- 1 Complete Procedure 24: Software powerdown.
- 2 Set the MPDU circuit breaker for the Application Module to OFF (down) or press the black power pushbutton on the IPE Module.

The top breaker powers the Application Module next to the MPDU (on the left-hand side facing the AEM). The bottom breaker powers the second module.

Wait 60 seconds before adding or removing hardware, or before trying to restore power.

## **Procedure 26: Upgrading the Application Module from an MVME147 card to an MVME167 card**

- 1 Complete Procedure 25: Hardware powerdown.
- 2 Loosen the screws at the top and bottom of the card.
- 3 Use the ejectors to unlock the card.
- 4 Pull the MVME147 card out of the Application Module.
- 5 Slide the MVME167 card into the Application Module. Firmly press the middle of the faceplate to seat the card.
- 6 Tighten the screws on the faceplate of the replacement card.
- 7 Restore power to the Application Module by setting the MPDU circuit breaker to ON (up).  
  
The system reboots into the "Console Login:" prompt.
- 8 Complete Procedure 6: Load the operating system tape on an IPE Module or an Application Module with an MVME167 card.
- 9 Complete Procedure 7: Reboot and go through setup.
- 10 Complete Procedure 8: Load the application software from tape.
- 11 Complete Procedure 9: Restore configuration files and data files from the backup tape.

## **Procedure 27: Upgrading an Option 11 to an Options 21–81 IPE Module**

The Option 11 IPE Module frame is narrower than the Options 21–81 module frame. When converting from an Options 21–81 frame to an Option 11, use the same procedure as outlined below. Note that the screw holes in the Options 21–81 module frame are in the same locations as the Option 11 module frame.

- 1** Remove the IPE Module from the Option 11.
- 2** Lay the module on its side with the outside of the disk drive card facing up and the faceplate of the IPE Module facing you.
- 3** Remove the SCSI terminator from the faceplate.
- 4** Using a small Phillips screwdriver, unscrew the six screws located on the outside of the disk drive card.  
  
These screws are indicated by arrows printed on the disk drive card. Set the screws and flat washers aside.
- 5** Hold the disk drive card by the edges. Push the disk drive card away from the faceplate, then lift it up and away.
- 6** To separate the disk drive card from the CPU card, disconnect the SCSI I/O cable from the CPU card at connector J14.
- 7** Pull open the ejectors at either end of the SCSI cable plug on the CPU card and lift the connector out of the plug.
- 8** Disconnect the power cable from the CPU card at connector J5.
- 9** Turn the CPU card over and remove the Option 11 bracing support.  
  
This bracing support sits inside the module between the CPU and disk drive cards. Hold the support with one hand while removing the screw from the CPU board with the other.
- 10** Remove the six screws and flat washers securing the CPU card to the IPE Module frame.
- 11** Pull the CPU card away from the faceplate and lift.
- 12** Place the CPU card against the Options 21–81 module frame, making sure the edges of the card are securely against the faceplate.  
  
Line up the Abort and Reset switches with the corresponding cutouts in the faceplate.

- 13** Replace the six screws and flat washers, reattaching the CPU card to the Options 21–81 IPE Module frame.
- 14** Insert the Options 21–81 bracing support.  
This bracing support sits inside the module between the CPU and disk drive cards. Hold the support with one hand while inserting the screw into the CPU board with the other.
- 15** Turn the CPU card and frame over and reconnect the disk drive card to the CPU card by connecting the power cable to the CPU card at connector J5.
- 16** Connect the disk drive card's SCSI I/O cable to the CPU card at connector J14. Make sure the SCSI plug's key bumps are lined up correctly and the latches are closed.

**Note:** To install the IPE Module, refer to Table 11 in Chapter 5, "Hardware installation overview."

## **Procedure 28: Installing the cables for Ethernet LAN support (Application Module)**

This procedure assumes that your Application Module contains the following:

- an MVME167-02 SBC card
- an MVME712M transition card
- a generic I/O panel

Application Modules are not shipped with the following two cables that are essential for Ethernet LAN support:

- an NT7D47DA internal cable to connect the MVME712M card to the Ethernet port of the generic I/O panel
- an NT7D47EA external drop cable to connect the Ethernet port of the generic I/O panel to the Ethernet

This procedure describes how to install these cables.

- 1** Ensure that power to the Application Module is turned off. You may need to perform Procedure 25: Hardware powerdown.
- 2** Loosen the four screws in the front of the Application Module.
- 3** Using the handles on each side, slide the Application Module out 9 or 10 cm (3 or 4 in.) to provide access to the connectors of the MVME712M card.
- 4** Remove the eight screws holding the generic I/O panel to the rear of the AEM and move the generic I/O panel outside the AEM so that you can work on it.
- 5** Connect the end marked P1 of the NT7D47DA cable to the Ethernet connector of the MVME712M card.
- 6** Remove the standoff screws from the end marked P2 of the NT7D47DA cable and connect that end to the Ethernet port at the rear of the generic I/O panel. Use the standoff screws to attach the P2 end to the generic I/O panel.
- 7** Reinstall the generic I/O panel using the eight screws removed in step 4.

- 8 Slide the Application Module back into place and tighten the four screws.
- 9 Connect the NT7D47EA cable to the Ethernet port on the generic I/O panel. This cable will be connected to an Ethernet transceiver. For more information, refer to "Installing Ethernet LAN support" in Chapter 9, "Meridian Link/CCR interface cabling."

## Procedure 29: Installing the MVME332XT or MVME332XTS ACC card

- 1 Complete Procedure 3: Hardware powerdown.
- 2 Loosen the screws at the top and bottom of the card.
- 3 Use the ejectors to unlock the card.
- 4 Pull the card out of the Application Module.
- 5 Check the switches and jumpers on the replacement card (see Tables 145 and 146).
- 6 Slide the replacement unit into the Application Module. Press hard in the middle of the faceplate to seat the card.
- 7 Tighten the screws on the faceplate of the replacement card.
- 8 Restart power to the Application Module.

**Table 145**  
MVME332XT ACC card switch settings

Switch	Position							
	1	2	3	4	5	6	7	8
S1	on	off	off	off	off	on	on	on
S2	off	off	on	on				

**Table 146**  
MVME332XT ACC card jumper settings

Block	Jumper setting
J1	1–2, 5–6, 7–9, 8–10, 11–12, 15–17
J4	1–2



---

## Chapter 18: Acceptance testing

---

This chapter describes the various acceptance tests you can perform.

### Meridian Link/CCR

After you have installed Meridian Link, CCR, or both, check that the installation was successful by following the procedure below.

This procedure assumes that you have

- loaded the operating system (using Procedure 5 or 6)
- rebooted the operating system (using Procedure 7)
- loaded the application software (using Procedure 8)
- restored the configuration files and data files (using Procedure 9)

- 1 At the “Console Login.” prompt, type **maint** and press [Return].
- 2 You are prompted for a password. Type the password and press [Return]. The default password is **maint**.
- 3 At the “maint>” prompt, type **fileverif** and press [Return].

Messages appear as shown in Figure 295.

**Figure 295**  
**File verification messages**

```
FILE VERIFICATION AS OF 09/20/93 12:13:01
09/20/93 12:13:01 FILE VERIFICATION AS OF 09/20/93 12:13:01

Static file verification found everything to be in order.
Permissions and ownership tests found everything in order.
Structural verification found maint data files to be in order.
```

- 4 Type **exit** and press [Return] to go to the “Console Login:” prompt. CCR or Meridian Link or both have now been installed and verified.
- 5 Unlock the tape drive and remove the tape.

To ensure that CCR is working correctly, you may want to create a simple script and execute it. For information on creating and executing a script, refer to the *CCR User Guide* (P0747008).

**Note:** If you have never written a script nor used script commands, you may need to refer to someone who has, such as a CCR administrator.

- 1 Log into CCR by typing **ccrusr** and pressing Return.
- 2 When prompted, type the password and press [Return]. The default password is **ccrusr**.
- 3 When prompted, type in a user ID (such as 0001) and press [Return].
- 4 When prompted, type in the user password (such as **admin**) and press [Return].
- 5 Write a simple script. Refer to the chapter “Writing scripts” in the CCR User Guide.
- 6 Validate the script to confirm its accuracy. Refer to the chapter on “Writing scripts” in the CCR User Guide.
- 7 Correct any errors found during validation.
- 8 Install the script. Refer to the chapter “Writing scripts” in the CCR User Guide.
- 9 Associate the script to a CDN. Refer to the chapter “Associating CDNs and scripts” in the CCR User Guide.
- 10 Execute the script by dialing the CDN.

## Meridian Mail

This section describes how you can use Edit Voice to create voice segment files, how to record voice segments, and how to use them.

### Using Edit Voice to create voice segment files

Meridian Link provides the Edit Voice feature to define, organize, and store voice prompts in segment files. This section later describes how Play Voice uses the voice segments defined in Edit Voice to answer a customer's account balance query.

Once the mailbox has been configured, you can use the Meridian Link `editvoice` command to record your application's prompts in a voice segment file. Online help is available for the command, and within the edit voice session as well.

The application opens a voice segment file by name, and then selects voice segments within the file by number. Consequently, you must define the file name and the prompt segment sequence before you begin recording.

A single voice segment file can hold 1000 segments, and each segment can be up to 30 seconds in length. Thus, although an application can have only two voice segment files open against a voice channel at a time, this constraint is unlikely to present a problem.

Applications normally use one voice segment file for all prompts, because a list of segments from one file may be concatenated—without noticeable spacing—within one `playvoice` command. To see how this works, see “Example of customer account balance query” later in this section.

In general, only one voice segment file is needed. However, there may be external reasons to use more than one voice segment file within an application. For example, if prompts from several different voice files are used, each separate file must be specified in a separate Play Voice message, and there will be noticeable pauses within the prompts. Several voice segment files may be needed for applications with multiple menus, or where different areas of the prompts are changed at different times.

## Recording and trimming voice segments

In Edit Voice, each voice segment has a title and text associated with the recording. In general, you will want to create the new file, and then create the segments in the order you plan to use them.

When creating voice segments, enter the title and text before you start recording. You can then record with the text on-screen in front of you, so you are sure that you won't forget any part of your planned prompts.

It's almost impossible to record without leaving some silence at the front and end of the recording, so you would normally use the trimsilence command to trim the ends of a recorded digit, thus creating a more natural-sounding message.

Use the Edit Voice Trim Silence facility to cut blank space from prompts that will be concatenated. For example, if you want to record the digits "one" and "two" for playback in a sequence of digits, you will record "...one..." and then record "...two...." When you hear digits recorded this way played back in sequence, it sounds like "...one.....two...." However, after using the Trim Silence feature, you would hear "one..two" instead. It is best to run Edit Voice in a quiet environment, since background noise will prevent you from using Trim Silence.

## Creating a header file

If you define the segments the same way both in the application and in the voice segment file, you will not need a header record.

When you save the file, you can optionally use the editvoice command to write a "C" language header file to associate the prompt titles you created with the segment number they are recorded in. This file may be moved to tape with the backfiles command and transferred to your host computer from the tape if your host is compatible with the Motorola UNIX System V bru tape format.

## Using Edit Voice for the first time

The first time the editvoice command is run, it prompts you to create a VPE.PRO file. If someone else has already been using Edit Voice for another application, you must use the maint filedelete command to delete the existing VPE.PRO file before you start your session.

When creating your VPE.PRO file, Edit Voice prompts you for the mailbox number (the mailbox you created earlier, for your application), the mailbox password (which normally defaults to the same as the mailbox number), and the phone you want to record from.

## Example of customer account balance query

If your application wants to obtain a customer's account number and read back the customer's current balance, the prompts might look like those in Figure 296 and the session might resemble the Play Voice example session in Figure 297.

**Figure 296**  
**Example of voice segment file**

```
AddBalFile
Seg 1:Please enter your account number.
Seg 2:Your current balance is...
Seg 3:...dollars and...
Seg 4:...cents.
Seg 5:...One...
Seg 6:...Two...
Seg 7:...Three...
.
.
.
Seg 13:...Nine...
Seg 14:...no...
Seg 15:...thousand...
Seg 16:...hundred
```

**Figure 297**  
**Example of Play Voice session**

```
Call Offered--->
                <--- Answer Call
Call Answered--->
                <--- Play Voice (AddBalFile) Seg 1
Play Voice End--->
                <--- Collect Digits
Collect Digits End--->
                <--- Play Voice (AddBalFile) Seg 2, Seg 7, Seg 15,
                    Seg 6, Seg 16, Seg 3, Seg 14, Seg 4
```

For further information on the Voice Prompt Editor, refer to the *Meridian ACCESS Voice Prompt Editor User's Guide* (NTP 555-7001-318).

---

## Chapter 19: Single Terminal Access

---

This chapter describes how to configure the Meridian 1 to support Single Terminal Access (STA). STA is available with X11 release 19 and greater, and provides integrated access to operation, administration, and maintenance (OA&M) functions for the systems it monitors. STA allows a single terminal to access the Meridian 1 and up to three other applications, including Meridian Link/CCR. For more information, refer to the “Single Terminal Access” chapter in the *X11 System Management Applications* (NTP 553-3001-301).

### Hardware and software requirements

To implement STA to support Meridian Link/CCR, the following hardware, software, cabling, and connections are required:

- a VT220 terminal or compatible
- available ports on an MSDL card (NT6D80)
  - one for the STA terminal (must be port 0)
  - one for each STA-monitored system (Meridian Link/CCR)

**Note:** You can also use a port on the MSDL card for the AML connection.

- one MSDL faceplate cable (NTND27) for the STA port
- one MSDL faceplate cable (NTND27) for each monitored system port
- one NT1R03 or NT7D58 cable for each monitored IPE system
- one NT7D61 cable for each monitored Application Module system
- one null modem adapter for each NT7D61, NT1R03, or NT7D58 cable

- one 25-pin straight-through cable for the STA terminal
- the following software packages:
  - Single Terminal Access (STA) (package 228)
  - MSDL (package 222)
  - MSDL SDI (package 227)

## Before you begin

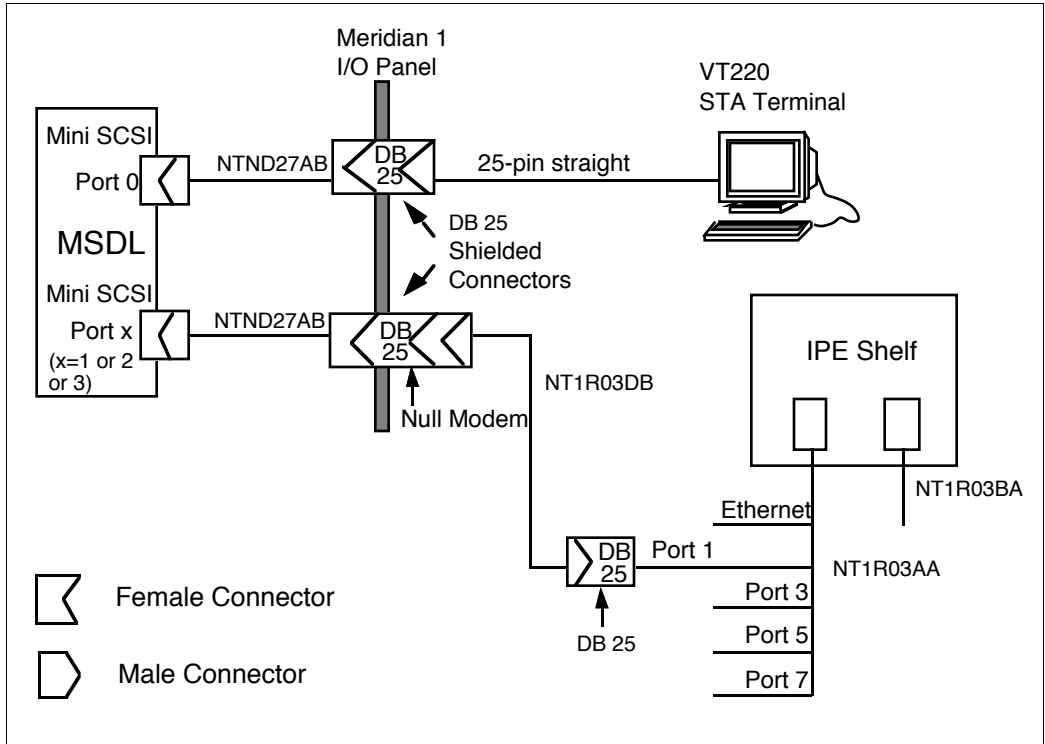
To ensure successful STA implementation, the following criteria must be met:

- The IPE Module must be connected to a Meridian 1 Options 21–81 system, or the Application Module must have an MVME712M transition card.
- An MSDL card must be installed in your system and set for RS-232 DCE. For information on installing an MSDL card, refer to Chapter 8, “Hardware installation procedures.”
- Port 0 on the MSDL card must be available for the configuration of an STA terminal, which acts as a switchboard between the multiple applications.
- At least one other port must be available for your STA system port connection to the Meridian Link/CCR.

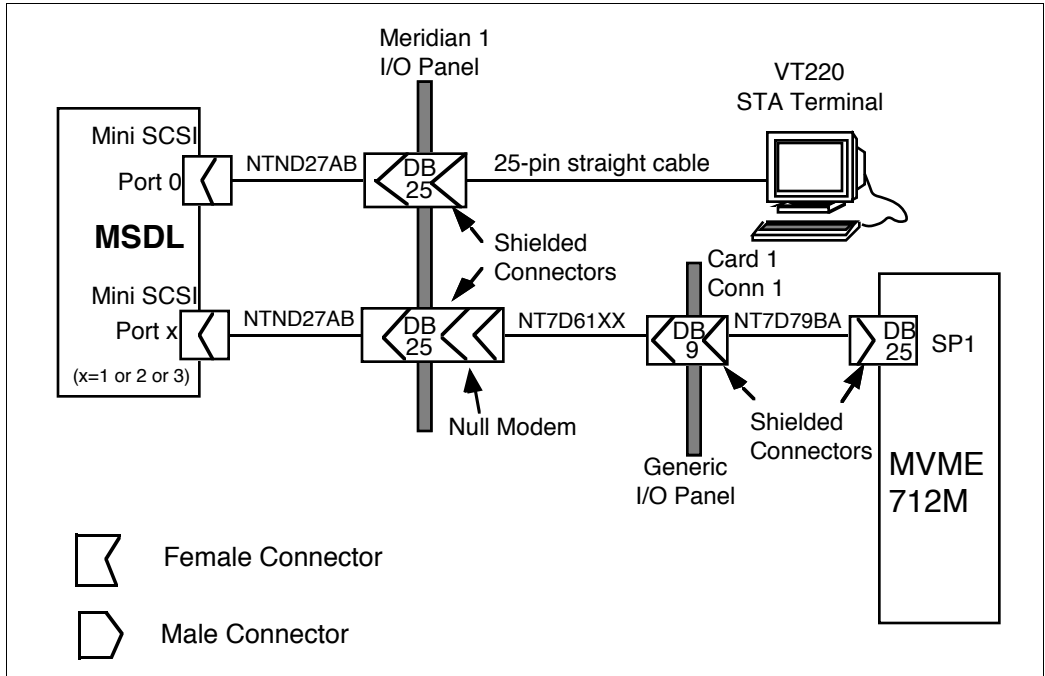
**Note:** In order to get optimum use out of the STA feature (that is, to allow for connection to Meridian MAX and Meridian Mail), you may need additional available ports on your MSDL card.



**Figure 298**  
**STA for Meridian Link/CCR on an IPE Module**



**Figure 299**  
**STA for Meridian Link/CCR on an Application Module**



## Setting up STA

- 1 Access LD 22 to verify that your system is equipped with the following software:
  - MSDL (222)
  - MSDL SDI (227)
  - STA (228)
- 2 Set up a VT220 or compatible terminal for STA. The setup parameters vary according to terminal type. For more information, refer to Chapter 10, “Installing peripheral devices.”

**Note:** It is important that the [ESC] key is set up correctly (~Key) or you will not be able to toggle from one system to another.

- 3 Access LD 48 and type **STAT MSDL** to check if there is an MSDL card available in your system.
- 4 Type **STAT MSDL x** to check the port assignments of port x on the MSDL cards (where x is a port number). Determine whether you will use an existing MSDL or whether a new one must be installed.
- 5 Connect an NTND27AB cable from port 0 on the MSDL card to the shield connector on the Meridian 1 I/O panel.
- 6 Connect a 25-pin straight cable from the other side of the shield connector (on the I/O panel) to the STA terminal.
- 7 Connect an NTND27AB cable from another port on the same MSDL card to the shield connector on the Meridian 1 I/O panel.

If you are using an IPE Module, connect a null modem adapter between the other side of the shield connector to either an NT1R03DB or an NT7D58 cable. This cable runs to port 1 on the IPE Module. Refer to Figure 298.

If you are using an Application Module, connect a null modem adapter between the other side of the shield connector to an NT7D61 cable. This cable runs to the Application Module's I/O panel (J7 on the I/O subpanel or SYS CONS on the universal or generic I/O panel). Refer to Figure 299.

**Note:** Steps 8–15 are performed on the Meridian 1 terminal. Ensure that the “Caps Lock” is set to the on position.

- 8** Configure the MSDL port for STA. Define the port and its characteristics by responding to the following prompts in LD 17. Substitute the device number where “x” appears in the Response column.

**Table 147**  
**LD 17—Configure MSDL port**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
ADAN	NEW TTY x	Add TTY with a logical ID x (0-15). The TTY number must be the same as the DNUM of the MSDL.
CTYP	MSDL	Card type is MSDL (automatic response)
GRP	0	Network Group Number (this prompt appears only for Option 81 systems)
DNUM	x	Device number; same as TTY (automatic response)
PORT	0	Admin port number (automatic response)
DES	STA_ADMIN	Designate port 0 for the STA terminal.
BPS	9600	Baud rate
PARY	NONE	Parity type
STOP	1	Number of stop bits
BITL	8	Data bit length
PARM	RS-232 DCE	Interface and transmission mode
FUNC	ABD FCL LME	MSDL card functions
USER	MTC SCH BUG	Output message types
XSM	NO	SDI port for the system monitor
TTYLOG	<cr>	Log buffer size
	<cr>	through remaining prompts

- 9 Verify the above configuration in LD 22.
- 10 Access LD 48 to verify that your MSDL is enabled. Type **STAT MSDL x**.

**Note:** If the MSDL is not enabled, type **ENL MSDL x**.

Figure 300 shows that the MSDL is enabled but the port is not enabled.

**Figure 300**  
**STAT MSDL**

```
STAT MSDL 11
MSDL 11: ENBL
SDI      11 DIS  PORT 0
```

- 11 Return to LD17 to configure the TTY port as the STA port and to set up additional ports for system monitors.

**Table 148**  
**LD 17—Configure MSDL port**

Prompt	Response	Comment
REQ	CHG	Create or change information in the database
TYPE	CFN	Configuration record data block
ADAN	NEW STA x	Add STA with a logical ID x (0-15)
TTY	0-15	Device number (MSDL SDI TTY)  <b>Note:</b> Use the same TTY number you assigned to the ADAN prompt in step 8.
CTYP	MSDL	Card type is MSDL (automatic response)
GRP	0	Network Group Number (this prompt only appears for Option 81 systems)
DNUM	0–15	Device number; same as TTY (automatic response)
ADMIN_ PORT	0	Admin port number (automatic response)
LANG	(ENG)	Language supported (automatic response for Release 19)
ADDITIONAL PORTS*	P1, P2, P3	The MSDL port(s) cabled to the SYS CONS port
* If one of the ADDITIONAL PORTS must be deleted, type an "X" before the port number (for example, XP2).		

- 12 Verify the above configuration in LD 22.
- 13 Access LD 48 and type **ENL STA x** to enable the STA port.
- 14 Type **STAT STA x** to verify the status of the STA application.  
Figure 301 shows STA 0 on port 0 (admin port) is enabled.

**Figure 301**  
**STAT STA**

```
STAT STA 0
STA 00
STAT: ENABLED          TGT: ENABLED
PORT 00 ADM PORT ABD ENABLED Admin Terminal
```

- 15** To verify port configurations on the MSDL, type **STAT MSDL x**.

Figure 302 shows the STA Administration terminal on port 0 and the STA monitored system on port 3.

**Figure 302**  
**STAT MSDL**

```
STAT MSDL 11
MSDL 11: ENBL
STA ADM 0 OPER PORT 0
STA      0      PORT 3
```

The STA Main Menu appears on your terminal. If it does not come up, try pressing Return several times. If you do not get the menu, check the terminal parameters, as described in Chapter 10, "Installing peripheral devices."

**Figure 303**  
**STA Main Menu**

```

                                STA Main Menu

F6: View Port Configuration
F7: Change Port Configuration
F8: Port Maintenance
F9: Access Options
F10: Connect to Meridian 1

-----Meridian 1 Single Terminal Access Port Status-----
MSDL Port:  0          1          2          3
Port Name:  Admin Terminal
Port Status: enabled      non-sta port      non-sta port      disabled
-----

```

- 16** At the STA Main Menu, click <PF7> to change the port configuration.
- 17** You are prompted for a port number. Type the MSDL port number you have designated to connect to the Meridian Link/CCR system console port (“1” for P1, “2” for P2, or “3” for P3).
- 18** At the login prompt, type your system name.
- 19** At the password prompt, type the Meridian 1 password.
- 20** Complete your port configuration by using the up/down arrow keys to go to each field, and the left/right arrow keys to select your entries. See Table 149 for the correct responses.



**Table 149**  
**Port configuration**

Prompt	Response
PORT TYPE	System
PORT NAME	Meridian Link/CCR
BAUD RATE	9600
DATA BITS	8
STOP BITS	1
INTERFACE	RS-232 DCE
EMULATION	EM200 8-bit Ctrl
CONNECT SEQUENCE	Ctrl-R (Read the instructions under the function keys on how to enter this information)
LOGOUT SEQ	

**Note:** Step 20 must be completed for each port connected to a monitored system.

- 21 Click <PF7> to proceed to the Port Maintenance Menu.
- 22 Select "Enable port" using the up/down arrow keys and press [Return] to enable the Meridian Link/CCR system port.

STA is now available to monitor both Meridian Link/CCR and the Meridian 1. You can access Meridian Link/CCR by pressing the assigned function key as shown on the STA Main Menu. You may have to press [Return] several times to get a response.

- 23 To return to the STA Main Menu, press [ESC] and type **STA**. Press [Ctrl]+[R] to refresh the screen when needed.



## Chapter 20: Ordering

Table 150 lists field-replaceable Application Module items and the quantity required for operation. Table 151 lists field-replaceable IPE Module items and the quantity required for operation.

**Table 150**  
**Field-replaceable Application Module items**

Eng. code (if applicable)	Common product code	Description	Applies to	Qty.
NT7D63AA	A0374107	Application Module chassis assembly	Systems with MVME712A/ MVME712AM	1
NT7D63AB	A0403312	Application Module chassis assembly	Systems with MVME712M	1
NT7D64AA	A0374109	Power supply, AC	AC version	1
NT7D64DC	A0374110	Power supply, DC	DC version	1
NT7D62AB	A0387828	Disk/tape unit 172M	All systems	1
	A0352271	High-density data cassette tape	All systems	1
	A0351919	MVME147SA-1 SBC card	All systems	1
	A0600181	MVME167-03x SBC card	All systems	1
	A0352210	MVME333-2 XCC card and MVME705B transition card	All systems	1
— continued —				

**Table 150**  
**Field-replaceable Application Module items (continued)**

Eng. code (if applicable)	Common product code	Description	Applies to	Qty.
	A0376918	MVME332XTS ACC card	All systems	1
	A0601182	MVME712M transition card	All systems	1
	A0351167	MVME712AM transition card	N. America	1
	A0376528	MVME712A transition card	Inter- national	1
NT6D51AA	A0387982	NT6D51AA transition card	All systems	1
NT7D46AB NT7D46AD NT7D46AF NT7D46AL NT7D46AT NT7D46AV	A0373932 A0373933 A0373934 A0373935 A0373936 A0373937	0.6 m (2 ft) SDI Paddle Board cable 1.8 m (6 ft) SDI Paddle Board cable 3 m (10 ft) SDI Paddle Board cable 6 m (20 ft) SDI Paddle Board cable 10.6 m (35 ft) SDI Paddle Board cable 13.7 m (45 ft) SDI Paddle Board cable	Conne- ctions to the XS01 board	1
NTND27AB	A0393419	1.8 m (6 ft.) MSDL to Meridian 1 I/O panel SCSI II cable	All systems	1
NT7D58AB NT7D58AD NT7D58AF NT7D58AL NT7D58AT NT7D58AV	A0373938 A0373939 A0373940 A0373941 A0373942 A0373943	0.6 m (2 ft) ESDI/MSDL cable 1.8 m (6 ft) ESDI/MSDL cable 3 m (10 ft) ESDI/MSDL cable 6 m (20 ft) ESDI/MSDL cable 10.6 m (35 ft) ESDI/MSDL cable 13.7 m (45 ft) ESDI/MSDL cable	All systems	1
NT7D61AB NT7D61AD NT7D61AF NT7D61AL NT7D61AT NT7D61AV	A0374031 A0374070 A0374071 A0374072 A0374073 A0374074	0.6 m (2 ft) SDI card cable 1.8 m (6 ft) SDI card cable 3 m (10 ft) SDI card cable 6 m (20 ft) SDI card cable 10.6 m (35 ft) SDI card cable 13.7 m (45 ft) SDI card cable	All systems	1
NT8D96AE	A0388536	2.4 m (8 ft) VME multi-port cable	All systems	3
— continued —				

**Table 150**  
**Field-replaceable Application Module items (continued)**

Eng. code (if applicable)	Common product code	Description	Applies to	Qty.
	P0713556	Dummy panel		
	P0715244	I/O subpanel (to be discontinued)		
	P0735020	Universal I/O panel	All systems	1
	P0744890	Generic I/O panel	All systems	1
	P0735022	Bracket	All systems	1
	A052758	Card slot blank faceplate	All systems	
— end —				

**Table 151**  
**Field-replaceable IPE Module items**

Eng. code (if applicable)	Common product code	Description	Applies to	Qty.
NT1R02AA	A0617009	Option 11 IPE Module	Option 11	1
NT1R02BA	A0617010	Options 21–81 IPE Module	Options 21–81	1
	A0600072	Upgrade chassis	Option 11 to Options 21–81	1
	A0352271	High-density data cassette tape	All systems	1
NT1R03AA	A0400295	Shielded four-port octopus cable with an Ethernet connector	All options	1
NT1R03BA	A0400297	Shielded four-port octopus cable	All options	1
— continued —				

**Table 151**  
**Field-replaceable IPE Module items (continued)**

Eng. code (if applicable)	Common product code	Description	Applies to	Qty.
NT1R03CA	A0401483	Extension cable	Option 11	2
NT1R03HF	A0402669	Modem cable (3 m, 10 ft)	All options	1
NT8D93AJ	A0357270	SDI cable for NT8D41 Paddle Board (5 m, 16 ft)	All options	1
NT8D93AW	A0357271	SDI cable for NT8D41 Paddle Board (15 m, 48 ft)	All options	1
NTAK19AA	A0372718	Two-port SDI cable for NTAK03AA TDS/DTR card	Option 11	1
NTAK19BA	A0372719	Four-port SDI cable for NTAK02AA SDI/DCH card	Option 11	1
NT1R03DB	A0402335	Extension cable; 25-pin D-type subminiature cable; male-male (0.6 m, 2 ft)	All options	
NT1R03DC	A0402336	Extension cable; 25-pin D-type subminiature cable; male-male (1.2 m, 4 ft)	All options	
NT1R03DF	A0402337	Extension cable; 25-pin D-type subminiature cable; male-male (3 m, 10 ft)	All options	
NT1R03DP	A0402338	Extension cable; 25-pin D-type subminiature cable; male-male (8 m, 25 ft)	All options	
NT1R03DV	A0402339	Extension cable; 25-pin D-type subminiature cable; male-male (14 m, 45 ft)	All options	
<b>— continued —</b>				

**Table 151**  
**Field-replaceable IPE Module items (continued)**

<b>Eng. code (if applicable)</b>	<b>Common product code</b>	<b>Description</b>	<b>Applies to</b>	<b>Qty.</b>
NT1R03EB	A0402330	Extension cable; 25-pin D-type subminiature cable; male-female (0.6 m, 2 ft)	All options	
NT1R03EF	A0402332	Extension cable; 25-pin D-type subminiature cable; male-female (3 m, 10 ft)	All options	
NT1R03EP	A0402333	Extension cable; 25-pin D-type subminiature cable; male-female (8 m, 25 ft)	All options	
NT1R03EV	A0402334	Extension cable; 25-pin D-type subminiature cable; male-female (14 m, 45 ft)	All options	
<b>— end —</b>				

## Component failure rates

Failure rates for basic Application Module components in terms of the number of expected failures in one million hours of operation are listed in Table 152 and the rates for basic IPE Module components are listed in Table 153.

**Table 152**  
**Application Module projected component failure rates**

Part number	Component	Failure rate per million hours	Mean time between failures
NT7D18AA	Application Equipment Module	1.43	699,500
NT7D62AA	Disk tape assembly	17.24	58,000
NT7D64AA	AM power supply, ac	13.89	72,000
NT7D64DC	AM power supply, dc	13.89	72,000
A0351919	MVME147 SBC card	11.98	83,500
A0600164	MVME167 SBC card	11.98	83,500
A0351167	MVME712AM transition card with modem	11.98	83,500
A0352210	MVME333-2 XCC card	11.72	85,500
A0351166	MVME705B transition card	16.67	60,000
A0376918	MVME332XTS ACC card	11.98	83,500
A0351356	TEAC MT-2ST/N50 cassette tape drive	93.46	10,700
	- at 15 min per 8 hours	29.07	34,400



**Table 153**  
**IPE Module projected component failure rates**

<b>Part Number</b>	<b>Component</b>	<b>Failure Rate Per Million Hours</b>	<b>Mean time between failures</b>
	SMM167 SBC card and adapter card	6.83	146,500
A0617011	240-Mbyte disk drive	7.69	130,000
A0617012	600-Mbyte tape drive	13.33	75,000
A0617009 A0617010	IPE Module	27.93	35,800

These failure rates should be used in conjunction with the spares planning. For more information, refer to *Spares Planning* (NTP 553-3001-153).



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## List of terms

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**ACD**

*See* Automatic Call Distribution (ACD).

**ACD DN**

*See* Automatic Call Distribution Directory Number (ACD DN).

**AEM**

*See* Application Equipment Module (AEM).

**AM**

*See* Application Module (AM).

**AML**

*See* Application Module Link (AML).

**Application Equipment Module (AEM)**

Module Packaging within the Meridian 1 Universal Equipment Module that supports the Application Module.

**Application Module (AM)**

Nortel's Motorola-based application processor that is packaged within an AEM in a Meridian 1.

**Application Module Link (AML)**

A Nortel internal and proprietary link that connects the Meridian 1 (via ESDI or MSDI) to the IPE Module or the Application Module.

**attendant**

A PBX operator position. Attendants typically receive incoming calls and extend them to the desired party. PBX users typically contact the attendant by dialing 0. The Meridian 1 supports multiple attendants, and offers features such as busy lamp field showing the busy/idle state of DNs.

**Automatic Call Distribution (ACD)**

This is a feature offered by the Meridian 1 that queues and distributes incoming calls to a number of answering positions. Calls are queued until an agent is available. If multiple agents are available, calls are serviced in the order they arrive and are distributed so that the workload at each answering position is approximately equal. ACD has many additional features, including recorded announcement (RAN), music while queued, night treatment, overflows, statistics/reports, and networking with ISDN.

**Automatic Call Distribution Directory Number (ACD DN)**

An ACD DN is the queue where incoming calls wait until they are answered. Calls are answered in the order in which they entered the queue.

**Base Operating System (BOS)**

Motorola's SYSTEM V/68 Base Operating System (UNIX). UNIX System V Release 3 Version 7.1 (V/68 R3V7.1) is used with the IPE Module or the Application Module.

**CDN**

*See* control directory number (CDN).

**Command and Status Link (CSL)**

A Nortel internal and proprietary link, also known as AML.

**Control Directory Number (CDN)**

A Control DN is a special ACD DN, configured in Meridian 1, to which no agents are assigned. To control calls in the CDN you need to create a script, otherwise the calls are put into the default mode. A call script is associated with a CDN, so that all calls entering a CDN are handled by the same call script.

**CSL**

*See* Command and Status Link (CSL).

**Customer Controlled Routing (CCR)**

CCR is a product that enables you to control and route Automatic Call Distribution (ACD) calls entering your Meridian 1 system. You can provide specific recorded announcements, music, and so on before assigning a call to an agent.

**Direct Inward Dialing (DID)**

An attribute of a trunk. The central office passes the extension number of the called party over a DID trunk to the PBX when offering a call to the PBX. The PBX is then able to automatically route the call to the extension without requiring operator/attendant assistance. In this way, a single trunk can terminate calls for many different extensions (but not simultaneously).

**directory number (DN)**

The number that identifies a telephone set on a PBX or in the public network. It is the number that a caller dials in order to establish a connection to the addressed party. The DN could be a local PBX extension (local DN), a public network telephone number, or an ACD DN, the pilot or group number for an ACD queue.

**Directory Number Identification Service (DNIS)**

A service provided on a trunk. DNIS identifies to the called system the last digits of the number actually dialed by the caller. Meridian Link Release 5C and CCR Release 3C, in conjunction with X11 Release 24, support from seven to 31 DNIS digits. The DNIS digits are sent as in-bank DTMF tones on non-ISDN trunks, or using dial pulses on dial pulse (DIP) trunks. On ISDN PRA trunks, DNIS is carried in the called party IE field of the Q.931 Setup message.

**DN**

*See* directory number (DN).

**DNIS**

*See* Directory Number Identification Service (DNIS).

**Dual Tone Multi-Frequency (DTMF)**

The signaling method used with touch-tone 2500 telephones. Digits are sent as in-band tones, each digit being a unique combination of 2 out of 16 tones.

**Enhanced Serial Data Interface (ESDI)**

A Nortel Meridian 1 pack, numbered QPC513. This card supports internal communications between the Meridian 1 CPU and other components within the Meridian 1 system.

**Intelligent Peripheral Equipment (IPE) Module**

Nortel's smaller application processor that can be packaged in a Meridian 1 Option 11 cabinet or in an Options 21–81 IPE shelf.

**Interactive Voice Response (IVR)**

A system/facility that plays voice menus to callers, and acts upon user input (typically DTMF digits from a touch-tone phone).

**IPE Module**

*See* Intelligent Peripheral Equipment (IPE) Module.

**Meridian 1**

Meridian 1 is the private branch exchange (PBX) that handles the calls to and from an organization's ACD system. It routes calls to the various queues and provides the framework for all the ACD features available through various applications.

**Meridian Link**

Meridian Link is an application that allows a Meridian 1 system to exchange information with a host computer so that users can integrate the capabilities of both into a business application.

**Module Power Distribution Unit (MPDU)**

Part of an AEM that provides power to the Application Modules housed within it.

**Multi-use Serial Data Link (MSDL) card**

This card supports internal communications between the Meridian 1 CPU and other components within the Meridian 1 system.

**Northern Telecom Publication (NTP)**

A collection of documents and manuals that describe the Meridian 1 product portfolio and how to install, administer, and maintain it.

**Operations, Administration and Maintenance (OA&M)**

The tools, typically software, that enables a technician to configure, administer, and maintain a system.

**overlay**

Generally used to describe some software that is not always memory resident; it is loaded on request. In the Meridian 1, most configuration, administration and maintenance functions are done from a tty terminal using various overlays. Each overlay is designed for a specific task: for example, Overlay 10 is used to configure PBX (500/2500) sets, 11 to configure proprietary sets, Overlay 23 to configure ACD queues, Overlay 17 to configure I/O ports, Overlay 15 to configure customer data, Overlay 48 to configure link maintenance, etc. The Meridian 1 currently has some 100 overlays. An overlay is loaded from the tty by typing LD nn where nn is the overlay number. Overlays are exited by typing \*\*\*\*.

**private branch exchange (PBX)**

A CPE telephone switch, typically used by a business to service its internal telephone needs. A PBX typically offers many more advanced features that are generally available on the public network. A PBX interfaces with the public network central office via circuits known as trunks. PBX is also used as a name for a family of telephone sets: 500 (rotary) and 2500 (touch-tone) sets.

**profile**

All CCR users have a profile that defines their level of access to the system.

**QPC513**

A Nortel Meridian 1 circuit pack, also known as ESDI (Enhanced Serial Data Interface). This card supports internal communications between the Meridian 1 CPU and other components within the Meridian 1 system.

**route**

Route usually refers to a trunk route. This is a collection of trunks that share many common characteristics, such as trunk type (for example, DID). On the Meridian 1, trunks must be associated with (belong to) a trunk route. Routes are configured in Overlay 16 on the Meridian 1.

**SDI port**

This is used for the optional sharing features that allow the IPE Module or the Application Module console to access Meridian 1 administration and maintenance programs.

**Stand-alone System Interactive Diagnostics (SSID)**

A set of diagnostic tools that provide confidence tests on various IPE Module or Application Module hardware components.

**terminal number (TN)**

The physical address of a device (for example, telephone set, trunk, and attendant) on the Meridian 1 PBX. The TN is composed of the loop, shelf, card, and unit IDs.

**trunk**

Trunks are the physical links, or circuits, that enable telephone communication, such as the link between a PBX and the public central office (CO). There are various trunk types, which provide services such as Direct Inward Dialing (DID trunks), ISDN, central office connectivity (CO trunks). Trunks can be analog or digital. Digital trunks use A/B signaling, or D-channel signaling in the case of ISDN. Trunks are configured on the Meridian 1 in Overlay 14.

**Versa Module Eurocard (VME)**

VME bus is an industry standard, high-performance, 32-bit computer bus.

**Voice Response Unit (VRU)**

A device that plays voice menus to a caller and responds to caller instructions entered on a touch-tone phone. Also known as IVR or Interactive Voice Response.



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# **Meridian Link/ Customer Controlled Routing**

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